Ward Liner S. S. "Havana," re-equipped with Welin Quadrant Davits and our steel keel lifeboats;
order also received to re-equip her sister ship "Saratoga."

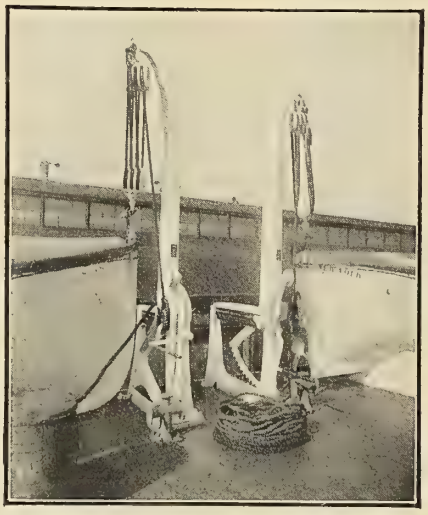
WELIN DAVITS AND LIFE BOATS

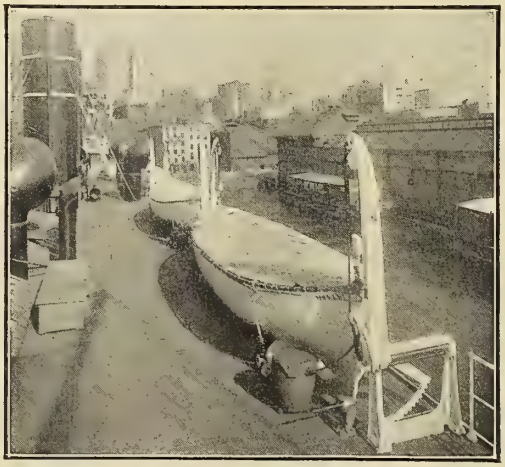
Form the Backbone of All Life-Saving Equipment

They last as long as any ship and in many cases are taken off old ships and used again.

They Have Rightly Won The Name

WELIN "LONG-LIFE" EQUIPMENT





Boat deck on S. S. "Havana".

WELIN MARINE EQUIPMENT CO.

305 Vernon Avenue, Long Island City, N. Y.

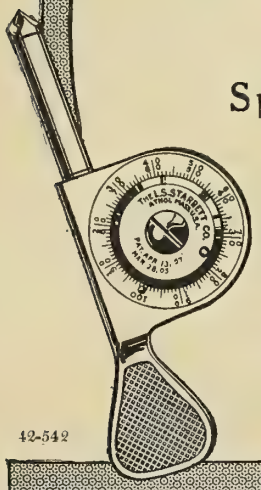
London House: 5 Lloyds Avenue, London, E. C.

How Fast is it Turning?

—a vital factor that you need to know about your auxiliary engines and turbines; or motors, generators, etc. Engines or motors which run faster than required, are needlessly overworked — serious troubles often result. How fast are *your* auxiliaries turning—do you know? To save trouble and expense, the cheapest and most accurate way to tell is to test with a

Starrett

Speed Indicator



These indicators have many other uses—great assistance in figuring pulley sizes and computing horse power. Starrett Speed Indicators can be used on any shaft, no matter how centered. Write for our catalog No. 21L, describing 2100 styles and sizes of fine tools and hack saws.

The L. S. Starrett Co.
— World's Greatest Tool Makers
ATHOL MASS.

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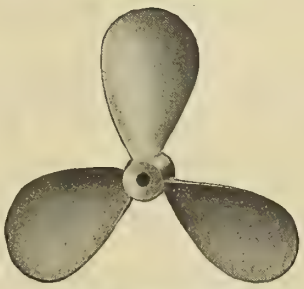
Spare's Manganese Bronze Propellers

Thin-bladed
Strong
Tough
Light
Non-corrosive



All Sizes
10 inches
to
20 feet
in Diameter

Unequalled for lasting Qualities and Efficiency

Write for Particulars

ALSO SOLE MANUFACTURERS

—DYSON—

STANDARD MOTOR BOAT PROPELLERS

American Manganese Bronze Co.
3431-3529 Rhawn St., Holmesburg, Phila., Pa.

Cyclone hoists are described in Catalogue No. 69, just published by the Chisholm-Moore Manufacturing Company, Cleveland, Ohio. All gears are cut from solid blanks. The bearings are of graphite bronze or roller bushed. Sizes ½ to 40 tons.

"The Electric Rudder Indicator" is the title of Bulletin No. 40, which has just been published by the Electro-Dynamic Company, Bayonne, N. J. "The application of electrical energy for various uses on board ship has made rapid strides during the last ten years, and not only are all modern ships lighted by electricity, but most of the auxiliary machinery is now driven by electric motors, and much of the signaling is also accomplished by the use of this agent. There was a time when ship owners, and the operating force of same, had considerable mistrust against electrical apparatus, fearing unreliability, but time has proven that such fears were ill-founded, and the use of electricity on board ship is gaining from year to year. Some years ago this company put upon the market an electrical rudder indicator which wherever installed has given perfect satisfaction. Owing to some other development in the electrical line which absorbed the full capacity of our factory, the electrical rudder indicator was crowded to one side for a time, but continued inquiries and repeat orders have convinced us that it is too good a device for this state of affairs to continue."

Steam specialties are the subject of a profusely illustrated cloth-bound catalogue of 222 pages, which has just been issued by the American Steam Gauge & Valve Manufacturing Company, 208 Camden street, Boston, Mass. This company is a manufacturer of gages, valves, indicators, steam traps and kindred appliances for governing indicating, measuring, recording and controlling steam, water, air, gas, oil, ammonia and all other pressures. The introduction to this catalogue, which will be sent to any of our readers upon request, is as follows: "It is with much pride that we present to our friends and patrons this, our No. 65 Catalogue, and are able to point to the fact that it commemorates the sixty-fifth anniversary of our business existence, which was established in 1851. Operating our modern plant, the largest of its kind in the world, our products have earned for themselves an enviable reputation, and we need no further introduction to the trade. This general Catalogue No. 65 supersedes our edition of 1908, and all other catalogues, price lists or pamphlets covering material manufactured by us issued prior to the date given below. Gages, valves, etc., will be furnished according to style and dimensions as given in this catalogue. If goods are wanted different from those shown, they will have to be made to order at special prices, which will necessarily be higher than prices on regular goods. It will be particularly noted that there are a number of changes in list prices as compared with any previous editions, and also that a number of important specialties have been added. Each item has been given a separate figure number, and it is particularly requested that in all correspondence, inquiries and orders, reference be made to Catalogue No. 65 and figure number of particular item or items."

"Sturtevant Power Apparatus" is the title of Bulletin 213 just issued by the B. F. Sturtevant Company, Hyde Park, Boston, Mass. "Sturtevant power apparatus, fully developed, well designed and efficient, covering a wide range of application, is already well known both in this country and abroad. For more than half a century the name Sturtevant has been synonymous with excellence and efficiency in the matter of apparatus for handling air and gases. Later developments in the line of engines, turbines and economizers followed the standard established in the case of fans and blowers. Irrefutable proof of the acknowledged quality of Sturtevant power apparatus is furnished by the list of users. The great lighting and power companies of New York, Boston, Chicago, Cleveland and many other cities, the mammoth plants of the Steel Corporation, paper mills, textile mills and miscellaneous manufacturing establishments without number, have for years used Sturtevant fuel economizers and mechanical draft apparatus. Repeat orders, coming time after time from these discriminating buyers, signify satisfaction and furnish evidence of the excellence of Sturtevant products. On the sea, also, our apparatus has found wide application, as is indicated by numerous installations of electric generating sets and forced draft equipment on ships of the United States navy. Our engineers, who are specialists in their line, are at your service at all times for consultation and advice. It is the purpose of this book to give a general description of the complete line of Sturtevant power apparatus. Special bulletins describing each particular product are published, and a list of such publications will be found on page 27. These will be sent on request and a return postcard has been inserted for the convenience of those desiring this detailed information."

"1500 Good Tools" is the title of a booklet just issued by the Goodell-Pratt Company, Greenfield, Mass. "The tools shown in this booklet are just a few of Goodell-Pratt's useful household tools—tools that should be in your home, as they will pay for themselves many times in the saving of repair bills. Goodell-Pratt tools are made primarily for mechanics. This means that they are better tools than are ordinarily made for popular or home use. A good mechanic never economizes on tools. He cannot afford to, for the quality of his work, and therefore his reputation, depend very largely on the kind of tools he uses. We can make no stronger statement than this: mechanics the world over know, use and praise Goodell-Pratt tools. All Goodell-Pratt tools are fully guaranteed. You can buy any of the tools here listed at most hardware stores, but if you find any difficulty in getting what you want, we will gladly supply you direct, prepaying carriage charges unless otherwise stated under price quoted."

In issuing its October *Monthly Stock List,* the Bourne-Fuller Company, Cleveland, Ohio, makes the following statement: "In issuing from month to month our stock list of materials on hand for immediate shipment, it is our purpose to have the list as accurate as possible and representative of the condition of our stocks. However, the daily shipments from same result in constant fluctuations in the stocks, and due to the present unusual demand following delayed deliveries from the mills, the fluctuations are at this time greater than usual. At the same time, our stocks are being constantly replenished; and while we may be short or out of certain items at the time reference is made to the list, we will also probably have on hand material in addition to that shown in the list. We will appreciate, therefore, inquiries for prompt warehouse shipments of any or all sizes usually carried; but for reasons mentioned above, we must ask the trade to appreciate that the list as issued is necessarily subject to change, and that the materials are offered subject to prior sale."

The Duntley Universal electric hammer drill is described in Bulletin E 43, just published by the Chicago Pneumatic Tool Company, 1026 Fisher building, Chicago, Ill. "A large number of these tools are in successful operation, and the design and construction has been demonstrated to be most satisfactory. The tools are in extensive use in drilling stone and concrete within the capacity of the tool, as well as for light chipping. The tool is equipped with a universal motor (patents covering which as applied to portable tools are controlled by this company), and will operate interchangeably on direct or alternating current. It is simply necessary to have the motor wound for the correct line voltage on which it is intended to operate. The hammer blow, which is delivered by a piston on the drill steel or chisel, is produced by pneumatic impact, and is very effective. At the instant the blow is struck the piston is running free of all mechanical parts, and therefore no shock or vibration is transmitted to the electrical parts of the tool. This means that there is no tendency for the electrical wires or connections to be crystallized due to incessant jarring. The tool is well balanced, and when held loosely in the hand the line of center of gravity falls between the third and middle fingers of the hand, and lies within the barrel of the tool, allowing the tool to hang vertically. A thumb-switch, conveniently located in the handle for the control of the electric circuit, is manipulated the same as in the well-known pneumatic hammers. All bearings are of the ball type, provision being made for the lubrication of all revolving and reciprocating parts. The gears and those portions of the moving parts subject to wear are all hardened. When drilling holes in stone or concrete in a downward position the powdered cuttings collect rapidly, and not only absorb and waste much of the force of the blow, but tend to choke up the hole, making it difficult to remove the drill bit. A special feature of the Duntley electric hammer drill is the live air device for clearing the hole of the cuttings while drilling. This makes it possible not only to deliver the full force of the blow on the solid stone or concrete, but the removal of the drill bit is accomplished without difficulty, as there are no cuttings left in the hole to interfere. Hollow steels for this purpose are furnished, as shown in the table on the opposite page."

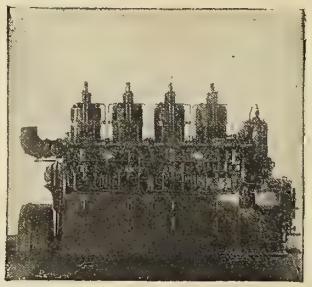
ASHTON Pop Safety Valves The Quality Standard

ASHTON Steam Gages The Accuracy Standard

No. 16 Style Marine Valve

THE ASHTON VALVE CO., BOSTON, U. S. A.
New York St. John's House, London, Eng. Chicago

SOUTHWARK - HARRIS VALVELESS ENGINE
DIESEL PRINCIPLE



The most reliable of the heavy oil engines.
It starts on compressed air, gradually works up to operation on oil, slows down, speeds up, stops, reverses, stops and starts again, and all by the manipulation of one hand wheel.
The flexibility of a steam engine with greater ease of control.

From Stone Cold to Full Power In Ten Seconds.

Sizes 120 to 2000 I. H. P.

Write for catalog

SOUTHWARK FOUNDRY & MACHINE CO.
400 WASHINGTON AVENUE, PHILADELPHIA, PA.
STANDARD GAS ENGINE COMPANY, SAN FRANCISCO
Exclusive Pacific Coast Representatives

The Mundy high-speed cargo winch for marine work—steam, electric or gasoline—is described in Catalogue A, published by the J. S. Mundy Hoisting Engine Company, Newark, N. J. The manufacturer states that the Mundy engine is the pioneer friction-drum hoisting engine, and that years of careful study of the requirements peculiar to the marine field have made it especially adapted to the work for which it is designed. Among the advantages claimed are quick starting, perfect control, rapid operation and low installation and operating costs.

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METHOD DYSON SUPERVISION
THERE IS A REASON

WRITE FOR LIST OF USERS AND
OUR INTERESTING LITERATURE

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HOLZAPFELS, LTD., Milburn House, Newcastle-on-Tyne, England.

BOLINDER'S

BOLINDER'S U.S.A. INSTALLATIONS

NAME.	Type of Vessel.	DIMENSIONS. Length.	Breadth.	Depth.	Tons—D. W.	Power, B.H.P.	Speed—Knots.
Vacuum Oil Co.	Tanker	306′	47′	28′	4500	1650	11
Pierce Oil Corp.	"	306′	47′	28′	4500	1650	11
Building	"	306′	47′	28′	4500	1650	11
"	"	306′	47′	28′	4500	1650	11
Chas. R. McCormick	Schooner	276′	48′	21′	3500	640	8½
"	"	276′	48′	21′	3500	640	8½
"	"	276′	48′	21′	3500	640	8½
Manitowoc Shipbldg Co.	"	261′	40′6″	23′	3000	640	9
"	"	261′	40′6″	23′	3000	640	9
A. O. Anderson & Co.	"	246′	44′	22′	2600	640	9
"	"	246′	44′	22′	2600	640	9
The Texas Co.	"	259′5″	45′3″	22′9″	3500	640	8½
E. K. Wood Lumber Co.	"	210′	42′	15′	1800	640	9¼
C. & O. Lumber Co.	"	175′	42′6″	18′		640	
W. R. Grace & Co.	Motorship	225′	42′6″	15′	2100	640	8½
"	"	225′	42′6″	15′	2100	640	8½
"	"	235′	42′6″	16′		640	
"Svaland"	Schooner	300′	42′	24′4″	4000	640	
A. O. Anderson Co.	"	192′	41′3″	21′	1500	480	8½
Standard Oil Co.	"	261′	43′	23′6″	3200	320	7
"	"	261′	43′	23′6″	3200	320	7
"	"	261′	43′	23′6″	3200	320	7
"	"	261′	43′	23′6″	3200	320	7
"	"	261′	43′	23′6″	3200	320	7
"	"	261′	43′	23′6″	3200	320	7
Standard Transp. Co.	Tanker	197′3″	35′	14′4″	1600	320	7½
Pendleton Bros	Schooner	255′	43′	22′6″	3000	320	
"	"					320	
Inter-Island Steamship Co.	Motorship	147′2″	30′	12′5″		320	
Andrew Mahoney	Schooner	225′	43′	20′3″	2700	320	6¾
"	"	225′	43′	20′3″	2700	320	6¾
"	"	225′	43′	20′3″	2700	320	6¾
Bucyrus Co.	Dredge					320	
Taylor Engineering Co.	Schooner	225′	44′	23′	2250	320	7
"	"	225′	44′	23′	2250	320	7
"	"	225′	44′	23′	2250	320	7
"	"	225′	44′	23′	2250	320	7
"	"	225′	44′	23′	2250	320	7
"	"	225′	44′	23′	2250	320	7
"	"	225′	44′	23′	2250	320	7
"	"	225′	44′	23′	2250	320	7
Matson Navigation Co.	"	212′	34′	21′6″	1700	320	8
R. P. Rithett	Bark	206′	38′	19′	1850	320	7½
Shell Oil Co.	Tanker	211′	34′	19′6″	1800	320	7¼
W. R. Grace & Co.	Schooner	170′	38′8″	9′8″	800	320	8½
W. & S. Job & Co.	"	210′	40′	19′	2100	320	7½
J. B. King & Co.	Barge	220′7″	35′	21′	1900	320	7
"	"	220′7″	35′	21′	1900	320	7
"	"	220′7″	35′	21′	1900	320	7
"	"	220′7″	35′	21′	1900	320	7
"Carmela"	Bark	262′	37′6″	22′	2200	320	7
Chas. R. McCormick	Schooner	230′	44′	19′		320	
R. Lawrence Smith	"	236′	40′	19′	2000	320	7
Pacific Commercial Co.						320	
Honolulu Iron Works		124′	25′	9′		240	
W. & S. Job & Co.	Schooner	153′8″	28′3″	12′4″	550	160	7
Borden & Lane	"	138′	32′	13′	600	160	7¾
"Marie L. Hanlon"	Tug	71′5″	17′8″	7′5″		160	9¾
A. J. West	Schooner	161′	40′	11′6″	1050	160	6
"Eclipse"		104′	27′	14′	500	160	7¾
"Pilar"	"	148′	32′		850	160	6½
"Gracie S"	Pilot	83′	24′7″	10′2″		120	9
W. & S. Job & Co.	Schooner	122′5″	24′	13′	400	100	6½
"Gilbert Islands"	"	125′	31′	11′9″	650	100	6
"Chiriqui"	"	110′	24′	8′	200	100	6½
"Ocmulgee"	Riverboat	120′	24′	5′	90	100	8¾
F. A. Scharberg	"	97′	19′6″	8′		100	

Total B.H.P. Marine Engines.... 29,060

In addition to above OVER 10,000 B. H. P. stationary and smaller marine engines installed throughout U. S. A.

BOLINDERS CO.

30 CHURCH ST. NEW YORK

"Characteristics of National Pipe," "National Bulletin No. 12" and "National Stationary and Marine Boiler Tubes" are the titles of some valuable bulletins published by the National Tube Company, Pittsburg, Pa. Copies of any of these publications will be sent to any of our readers who will write to the National Tube Company and ask for them, at the same time mentioning THE BOILER MAKER.

A double-end punch and shear is described in Catalogue O-1060 published by Bertsch & Company, Cambridge City, Ind., This machine is described in the catalogue as a double-end punch and shear with 60-inch throats, capacity 1¼ inches through 1-inch and shearing 1-inch plates. Made in all standard sizes.

"Oxy-acetylene welding is so universally useful in metal joining operations of all kinds that many shops have become accustomed to specify welding instead of riveting." This is the statement made in a circular published by the Prest-O-Lite Company, 818 Speedway, Indianapolis, Ind. One of the illustrations in this circular is a picture of some large vats for holding unusually searching chemical solutions, made by welding all seams by the Prest-O-Lite process. The result is that the welded joints are leak-proof. The catalogue states that all the splendid advantages of oxy-acetylene welding and cutting are practically doubled through the portability, economy, simplicity and efficiency of the Prest-O-Lite process.

Gages, taps and dies are the subject of a profusely illustrated catalogue of 270 pages which has just been published by the Greenfield Tap & Die Corporation, Greenfield, Mass. In addition to describing and illustrating dies, taps and gages of every conceivable variety, there are 40 pages of miscellaneous tables and information, including a glossary of terms; tables of United States Standard Threads, Tap Drilling Sizes; British Standard Fine Screw Thread; the Metric Screw Thread; the A. S. M. E. Screw Thread; Metric and English or American Equivalent Measures; Millimeters and Equivalent Decimals and Inches; Tapped Hole Limits for Machine Screw Taps, etc. A copy of this interesting and valuable catalogue will be sent to any of our readers free upon request.

"The Seabury Watertube Boiler for Stationary and Marine Service" is the title of a profusely illustrated catalogue of 48 pages which has just been published by the Boiler Department of the Gas Engine & Power Company and Chas. L. Seabury & Company, Con., Morris Heights, N. Y. "The Seabury safety watertube boiler is designed to meet the requirements of a light-weight boiler occupying a minimum of floor space per horsepower, besides possessing, to the highest degree, all the essential qualities and attributes of safety. Its simplicity of construction must appeal to all fair-minded engineers, especially as this simplicity tends to materially increase efficiency and durability. All the pressure elements throughout the Seabury safety watertube boiler, whether of the stationary or marine type, are kept as small as is consistent with good designing, thus making it an exceptionally safe steam generator. By comparing the steam drum of a Seabury boiler—its largest pressure element—with the large drums, many feet in diameter, in the shell and Scotch types of boilers, the claim of greater safety is at once apparent. A large number of Seabury boilers are to be found in both stationary and marine service. Boilers intended for stationary and commercial marine work, where weight is not an essential factor, are of heavy construction, with large steam drums and generating tubes. Steam domes are also added when required. High-speed yacht boilers are constructed with small drums and generating tubes, so as to economize in weight. Standard Seabury boilers are designed with a single steam drum connected to two lower or mud drums—one on each side—by two nests of bent tubes enclosing a large combustion chamber. The tubes are staggered so as to present the greatest amount of direct heating surface, and are also so arranged as to facilitate their cleaning by means of a steam jet and hose. When given ordinary care renewal of tubes will not be necessary for many years, and then, when found necessary, a tube can be replaced in a very short time. The two nests of tubes to the right and left of the combustion chamber, with their baffling walls, together with the feed water heater—when supplied—running crosswise over each nest of tubes, interpose an efficient heating surface from which the maximum amount of heat is extracted. We will furnish test data where required from our records of such tests as conform to the character of service which the contemplated boilers are to perform. It will readily be appreciated that the conditions of operation would greatly affect the result, so that we have adopted the policy of furnishing, upon request test data from boilers performing service similar to that intended."

"Enthusiastic? Why of course we are!" says the Ford Chain Block & Manufacturing Company, 130 Oxford street, Philadelphia, Pa., in a catalogue describing its "Tribloc" chain hoists. The company states, "We build the 'Tribloc' the best we know how, sell it a fair price and stand back of it every minute."

BUSINESS NOTES

THE MASSILLON FOUNDRY & MACHINE COMPANY, Massillon, Ohio, will increase its capital stock from $100,000 to $300,000, for the purchase of a site and the erection of a new plant, which will be 100 by 300 feet, of brick and steel, and located near the plant of the Central Steel Company.

A COUPLE OF RECOMMENDATIONS for Jeffrey's marine glue. A customer sends L. W. Ferdinand & Co., 152 Kneeland street, Boston, Mass., a photograph of a canvas-covered lap-streak rowboat, and writes that this boat was bought from O. Sheldon & Company in 1891; was covered with canvas laid in Jeffrey's No. 7 black soft quality marine glue by his father in 1892. "The boat has been re-ribbed and a new gunwale put on but has never leaked a drop. The hull is almost as good as ever. The wonderful thing about this boat is that it is lap-streaked and yet the glue has held ever since it was put on and is still holding to-day as good as ever. The boat has been in service from two to four months every year, and has always been pulled up on the beach. You can realize the wear on the canvas under such conditions. She has had service—hard service—and yet to-day she stands in a class by herself. We keep the canvas well painted; this, combined with the Jeffrey's marine glue used, is the whole secret." Another customer, a well-known yacht designer, writes: "Relating to Jeffrey's No. 1 black extra quality marine yacht glue, I am thoroughly familiar with this excellent material. I have used it for more than thirty years, beginning when it was little known in this country. I am not now engaged in building, but I recognize its value for various classes of work. I note that you claim for it a duration of four to six years; I used it in the deck seams of a small yacht in 1903, and I find it is still in very good condition."

MARINE REFRIGERATION.—Since last reported the Brunswick Refrigerating Company, New Brunswick, N. J., has sold the following plants: One-ton refrigerating and water-cooling plant to the Bull Insular Steamship Company, for the steamship *Moldegaard*.

To Mr. Allen K. White for the yacht *Absegami*, a ¼-ton plant.

To the Sun Shipbuilding Company, two 2-ton plants for hulls No. 1 and No. 2, now being built by them.

To the Petroleum Transport Company, a 1-ton plant for the steamship *Norman Bridge*.

To the Prince Line, a 1-ton plant for the steamship *French Prince*. This is the fifteenth machine sold to this company.

To the United States Coast and Geodetic Survey, a 2-ton plant for the steamship *Surveyor*, now being built at Manitowoc, Wis.

To the Baltimore Dry Docks & Shipbuilding Company, a 1-ton plant for hull No. 75.

To the Bull Insular Steamship Company, a 1-ton plant for the steamship *Dade*.

To the Ocean Steamship Company of Savannah, a 2-ton plant for the steamship *City of Savannah*. This is to form a duplicate unit on this steamer, which is now being overhauled at Robin's Dry Dock after having been sunk at Delagoa Bay.

To the Chester Shipbuilding Company, Chester, Pa., 1-ton plants for hulls No. 348, No. 351, No. 352 and No. 353.

Those interested in marine refrigeration will profit greatly by securing a copy of a new booklet issued by the Brunswick Refrigerating Company, entitled "Dividends from Waste." This will gladly be sent upon request, by addressing the Brunswick Refrigerating Company, Marine Department, New Brunswick, N. J.

UNION DRY DOCK & REPAIR CO.
Vessel Repairs in Wood and Iron
WEEHAWKEN, N. J.
Dry Docks and Shipyard Adjoining West Shore Ferry
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Wheeler Shipbuilding Co.
Constructors of WOODEN VESSELS
up to 500 tons
HUNTINGTON, L. I., N. Y. Telephone 594 Hunt
Lighters, Floats and Auxiliary Schooners.
Completely equipped machine shop.

SEND FOR NEW BOOKLET
"Marine Glue—What to Use and How to Use It"
We would esteem it a privilege to answer any question that may arise in regard to this material.
L. W. FERDINAND & CO.
152 KNEELAND STREET BOSTON, MASS., U. S. A.

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THE WORLD'S GREATEST DISPLAY OF BOATS, ENGINES AND ACCESSORIES
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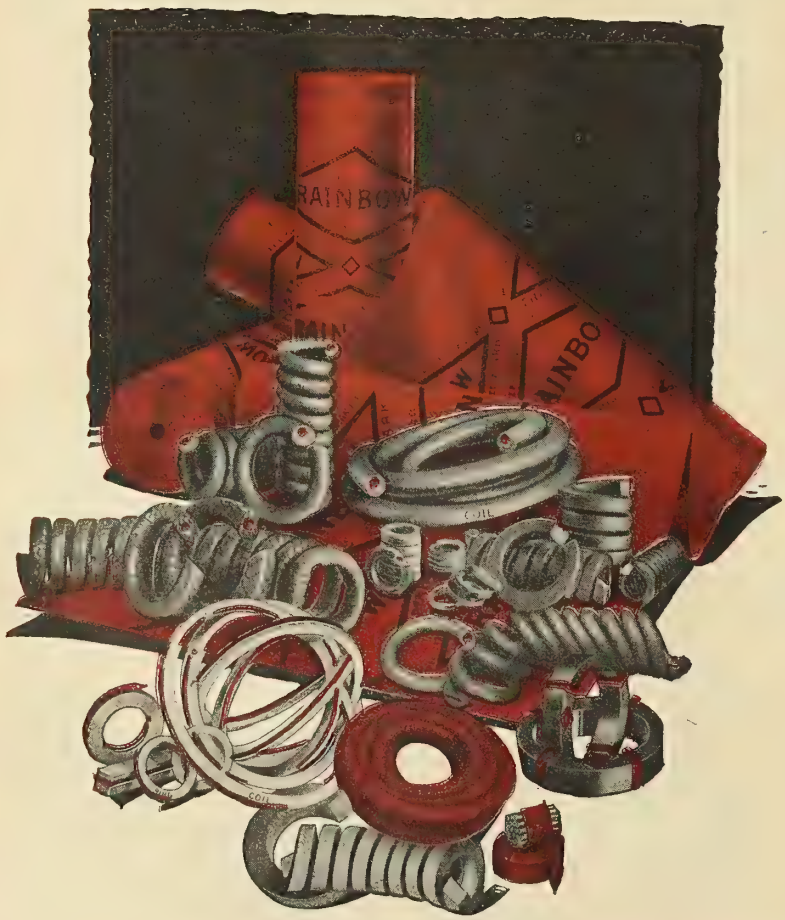

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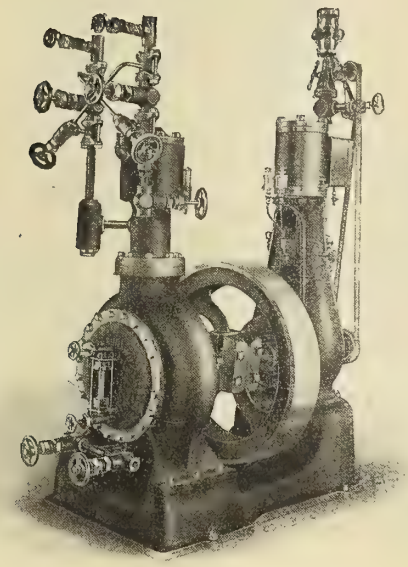

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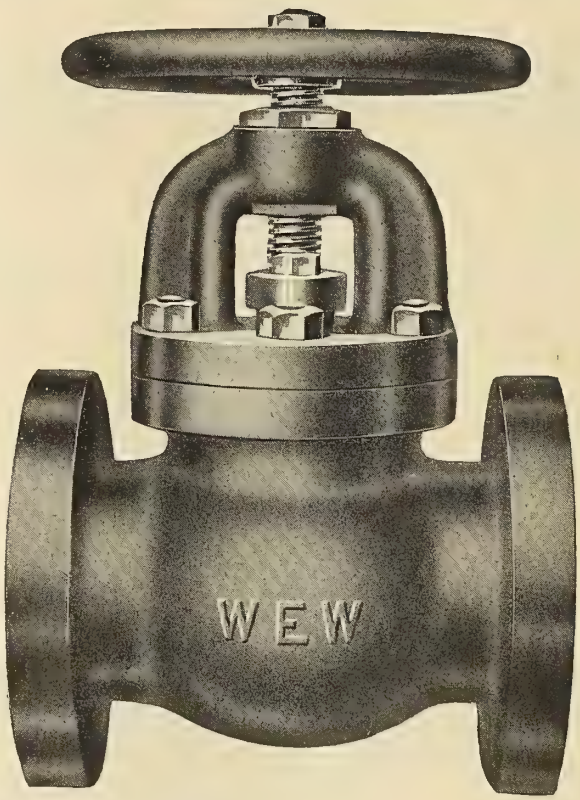

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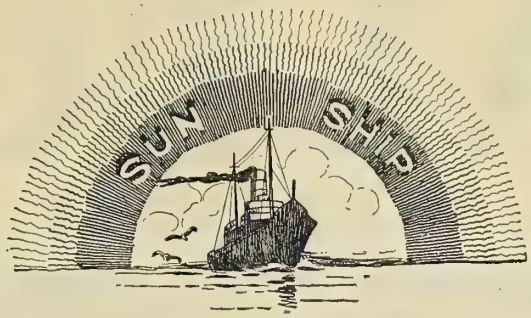

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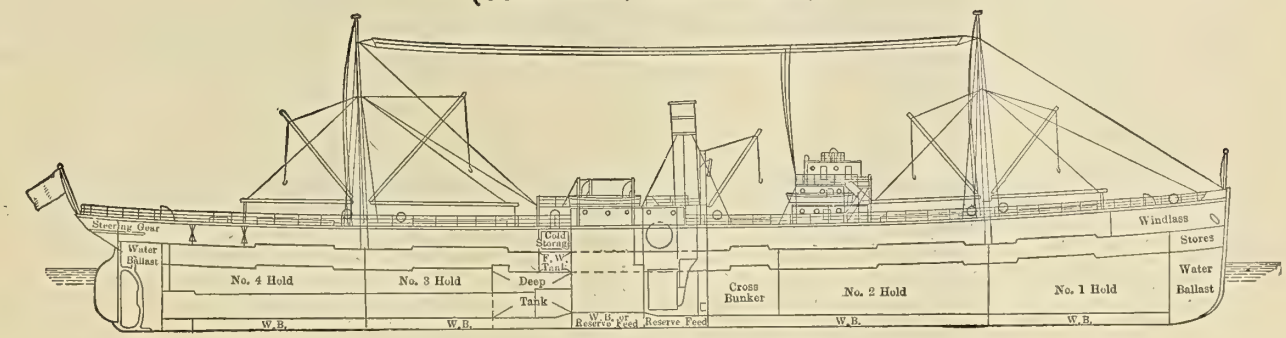

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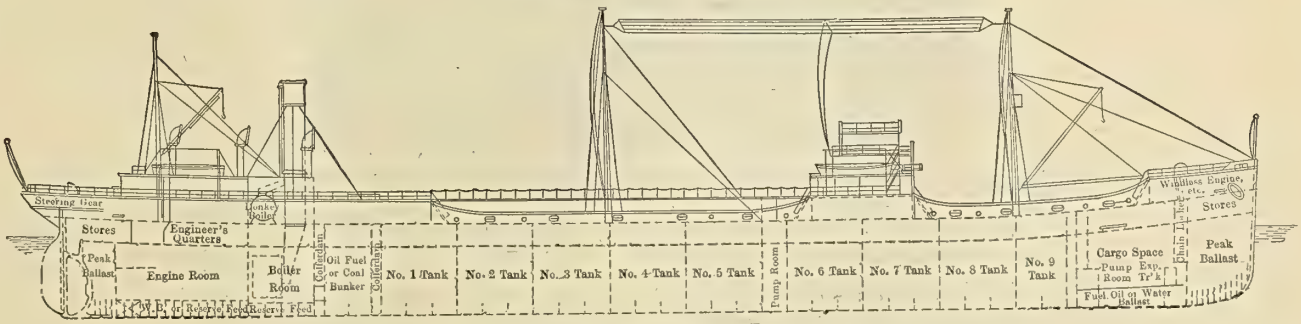

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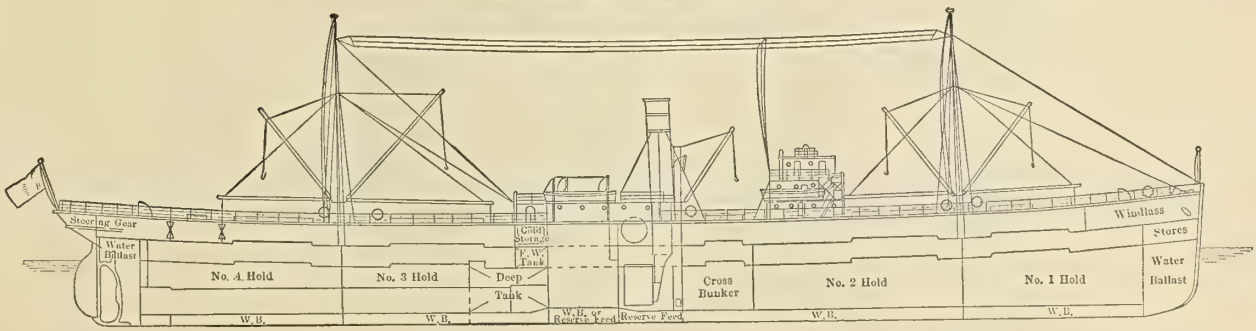

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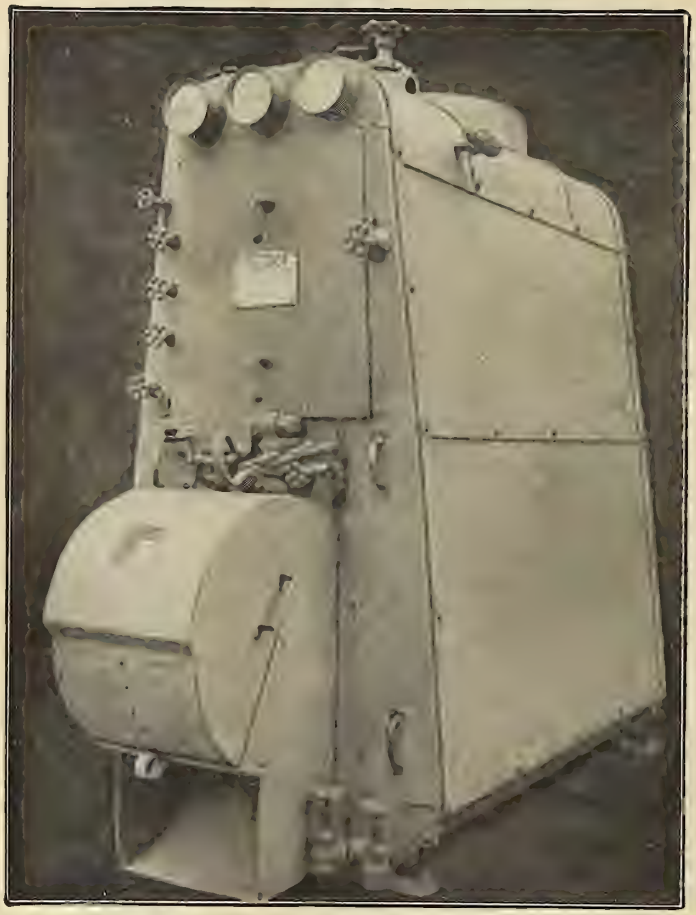

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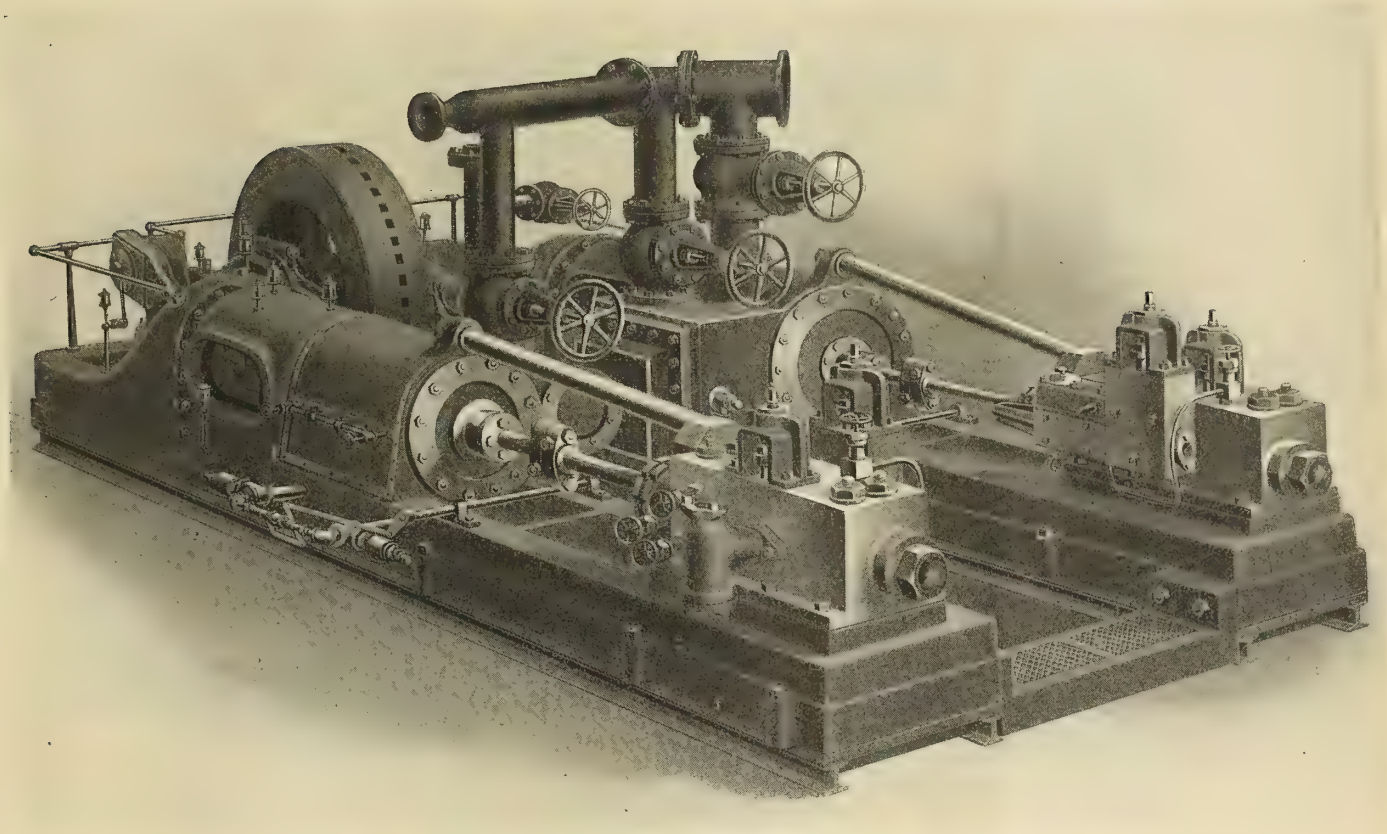

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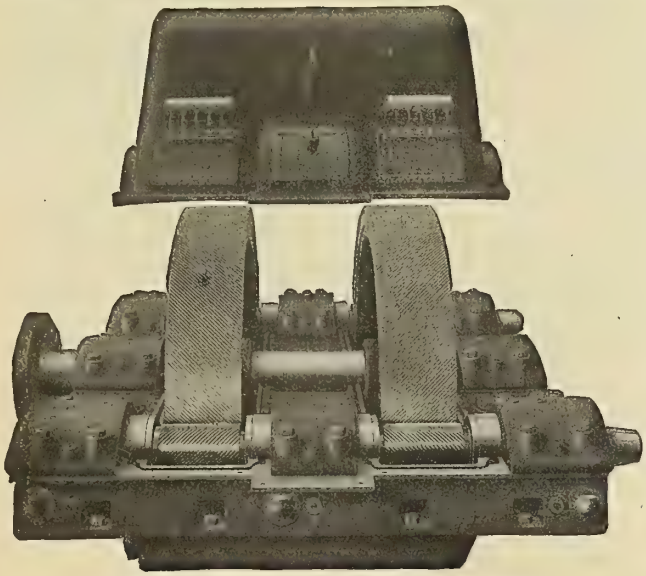

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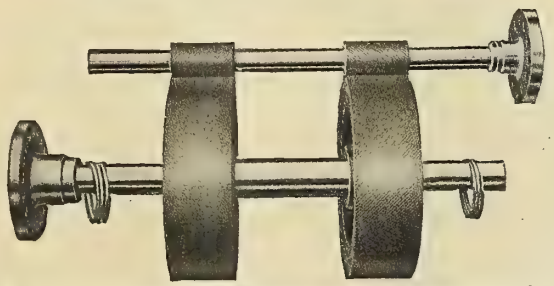

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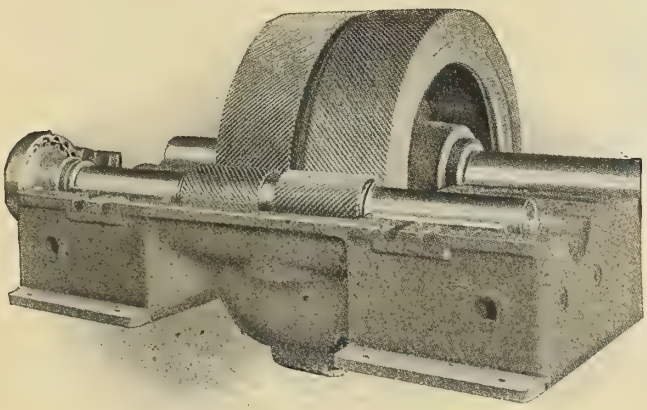

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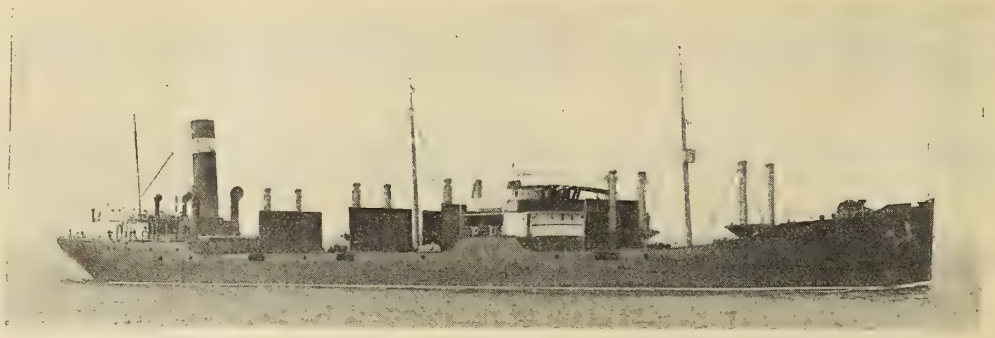

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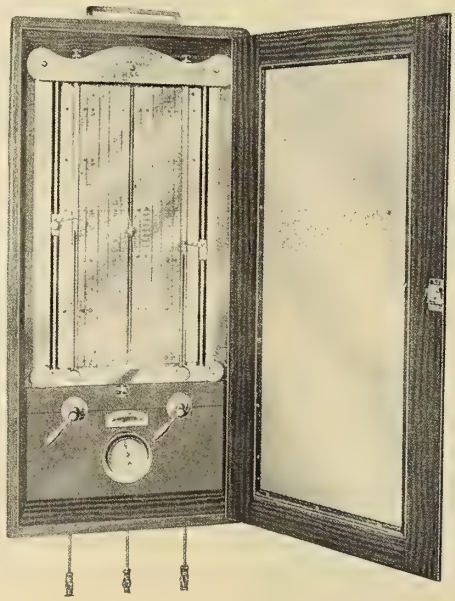

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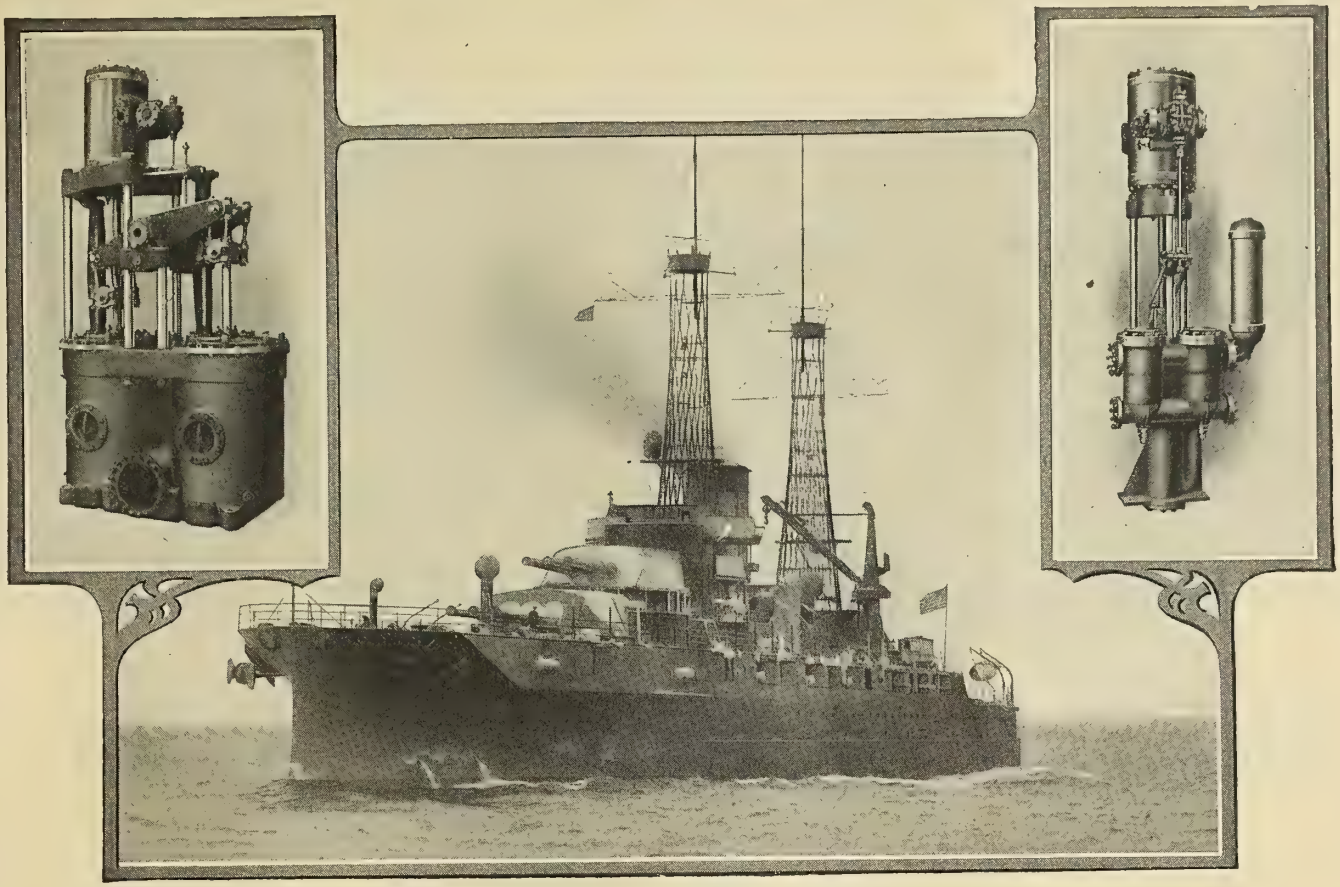

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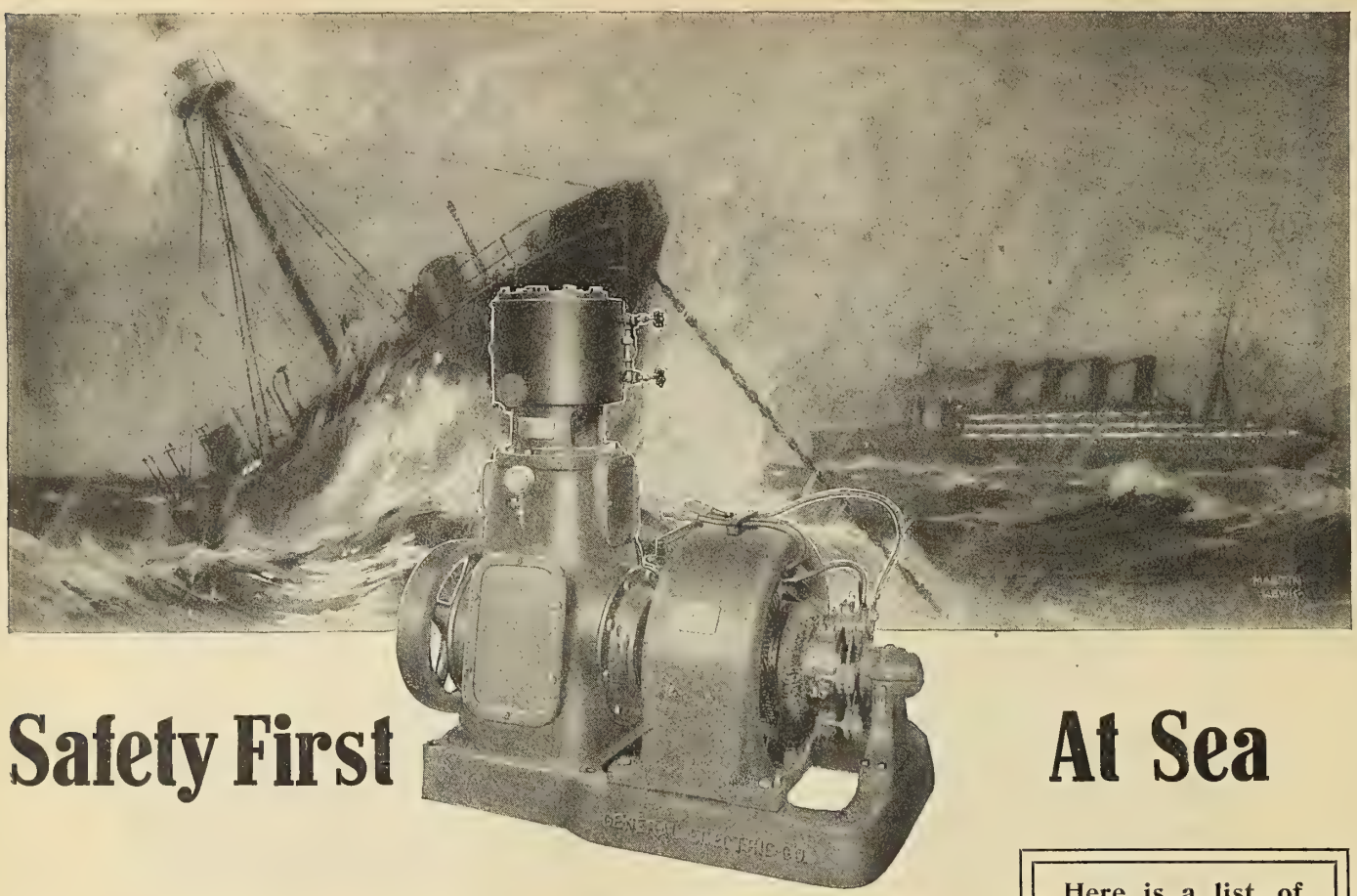

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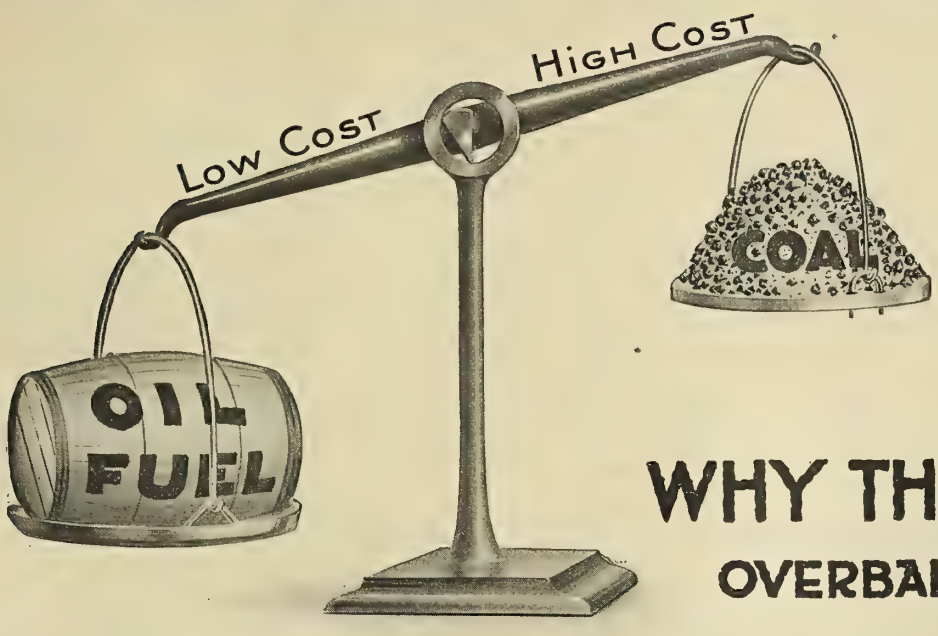

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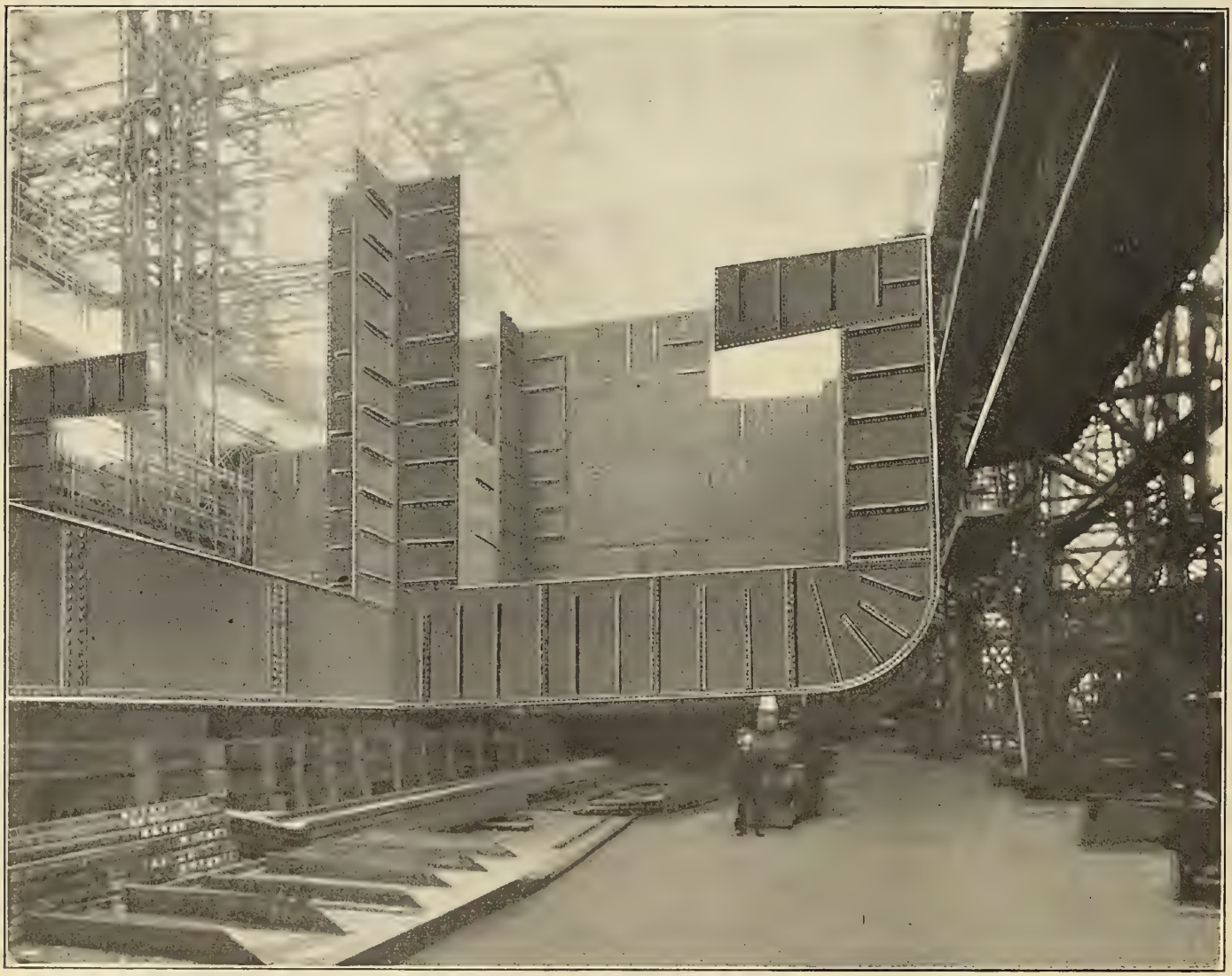

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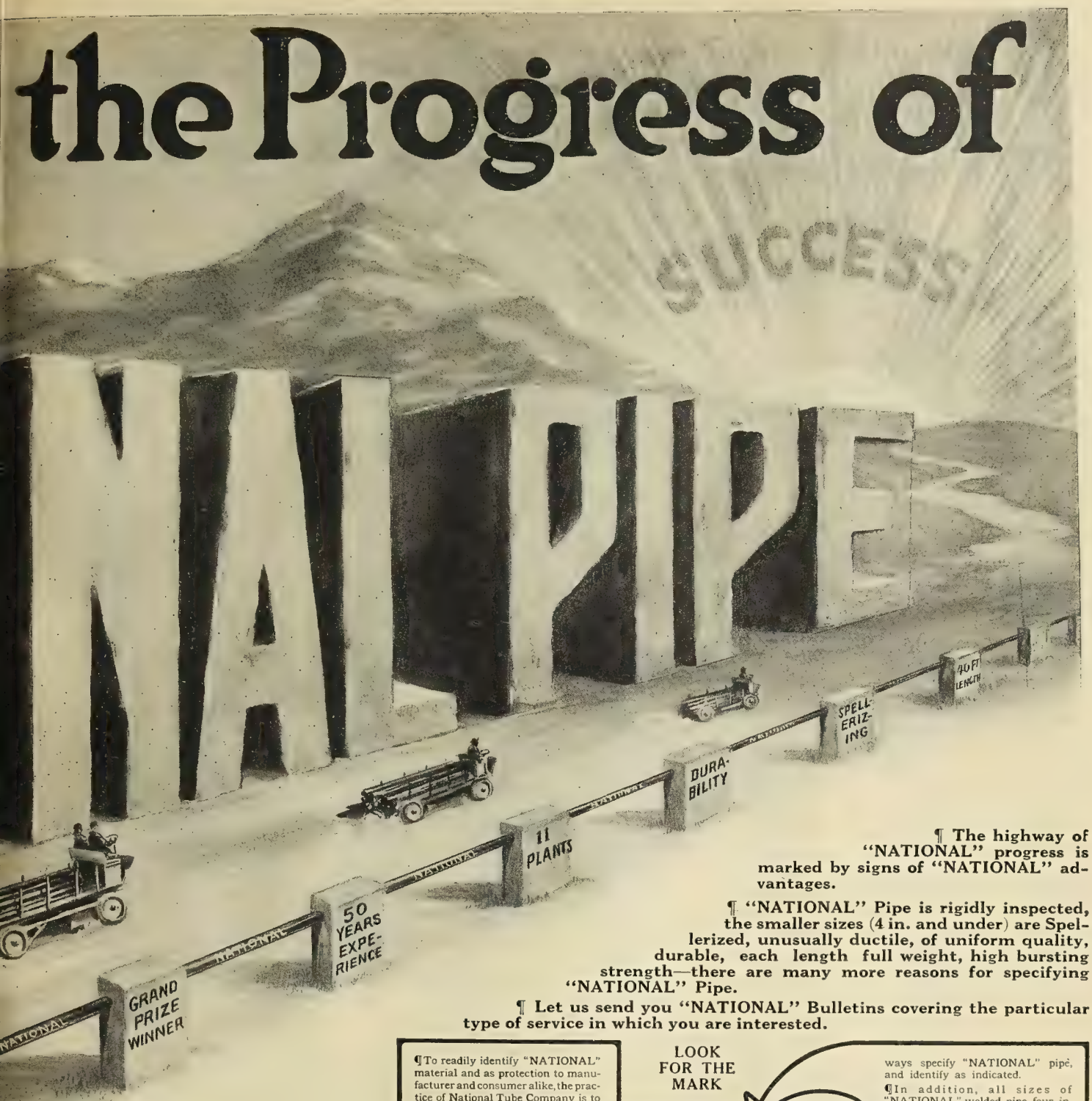

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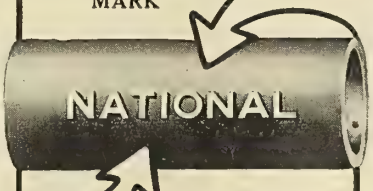

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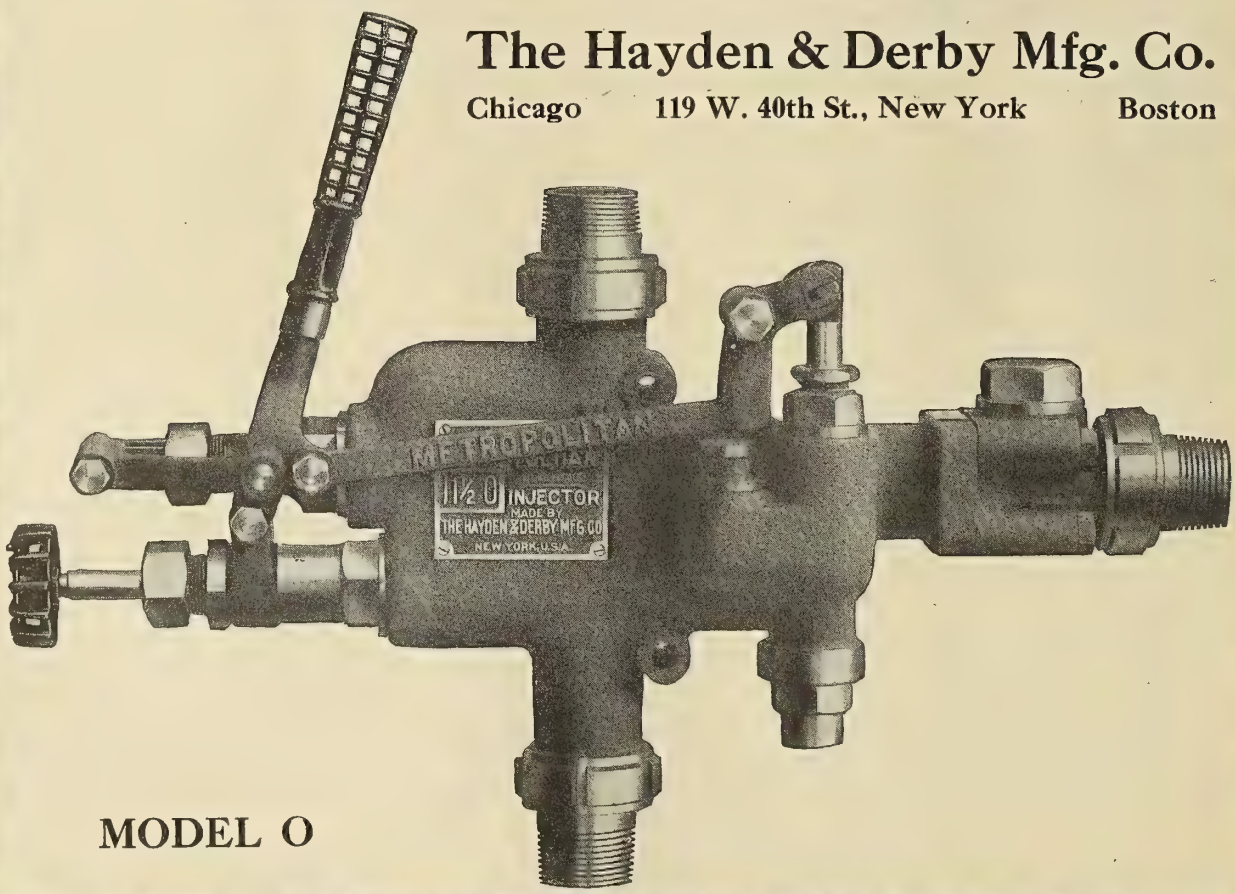

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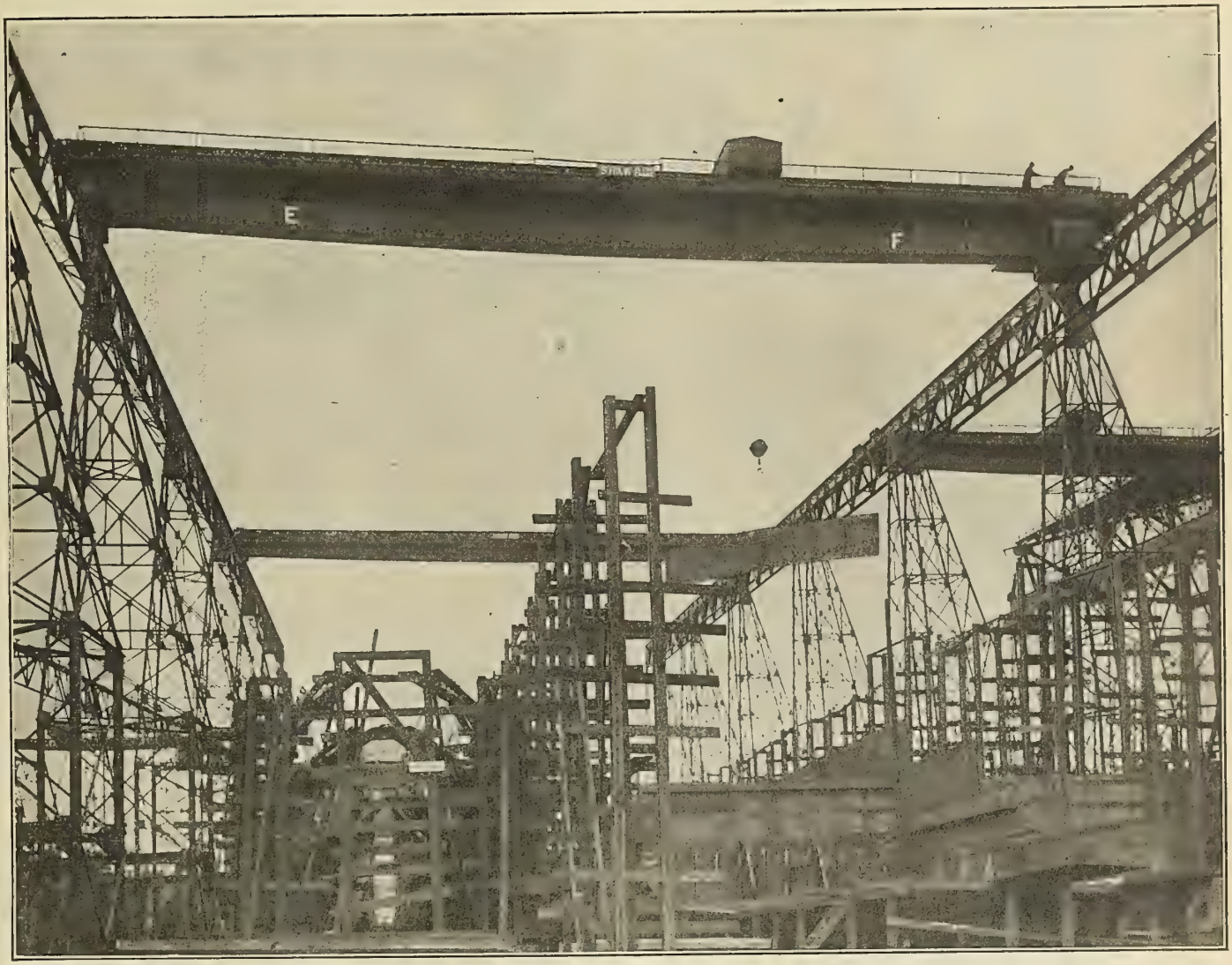

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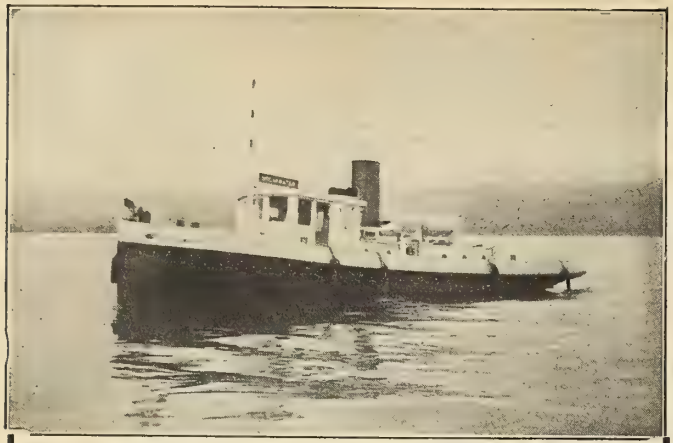

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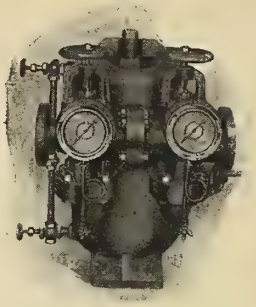

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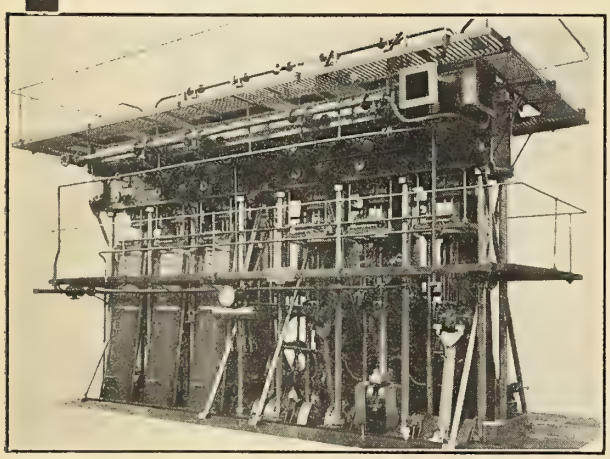

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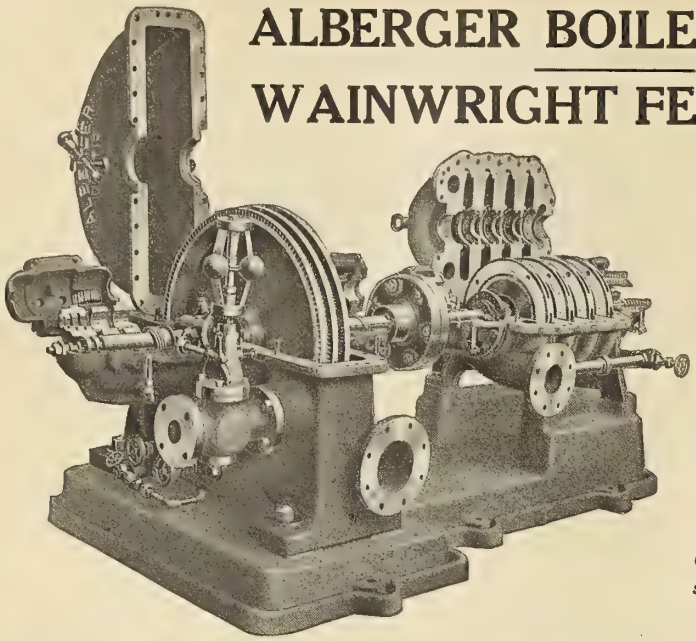

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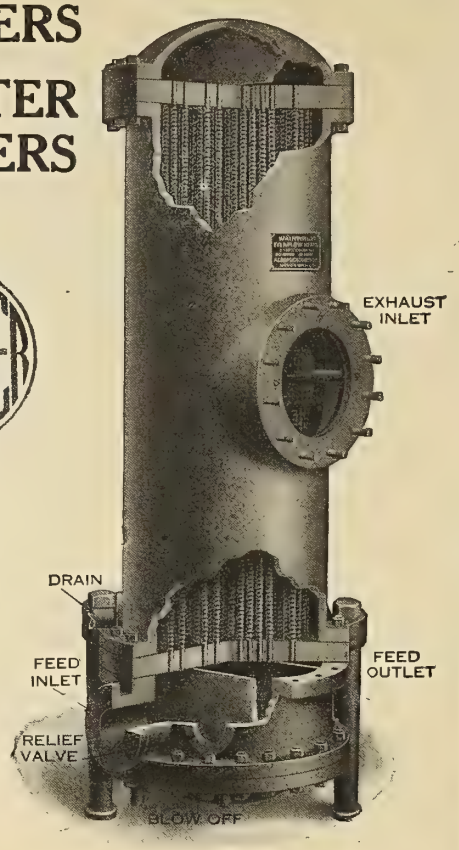

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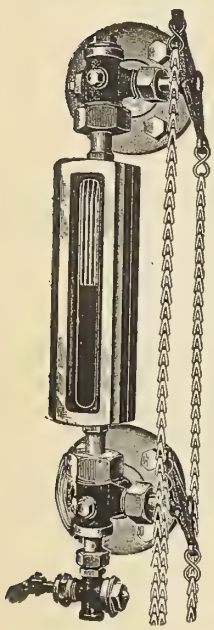

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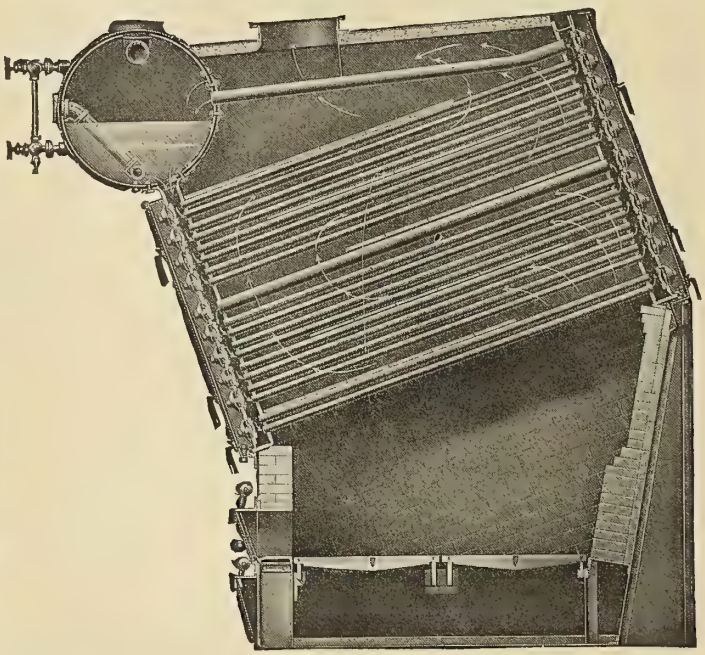

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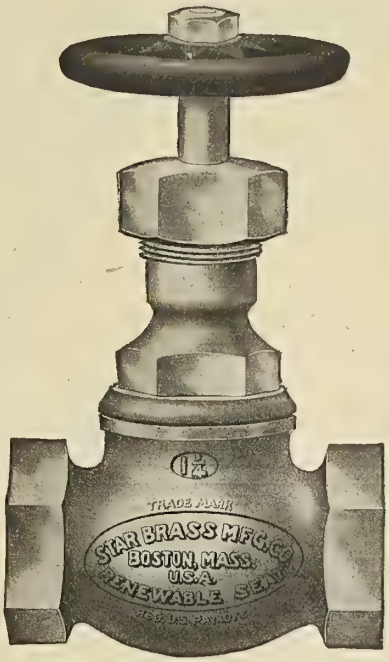

Seat and Disc are both Renewable and extra heavy; the bevel or taper of both is at a sharp angle, with a very light bearing, insuring less liability of foreign matter lodging on seat when valve is closed, also less chance of wire drawing and cutting.

Seat rings are of a "Patented" form with special taper seat where screwed in body. This design insures a perfect joint and absence of liability to distortion from lack of care in installation or unequal expansion in use.

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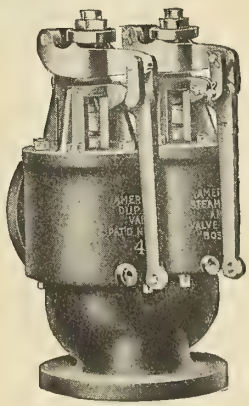

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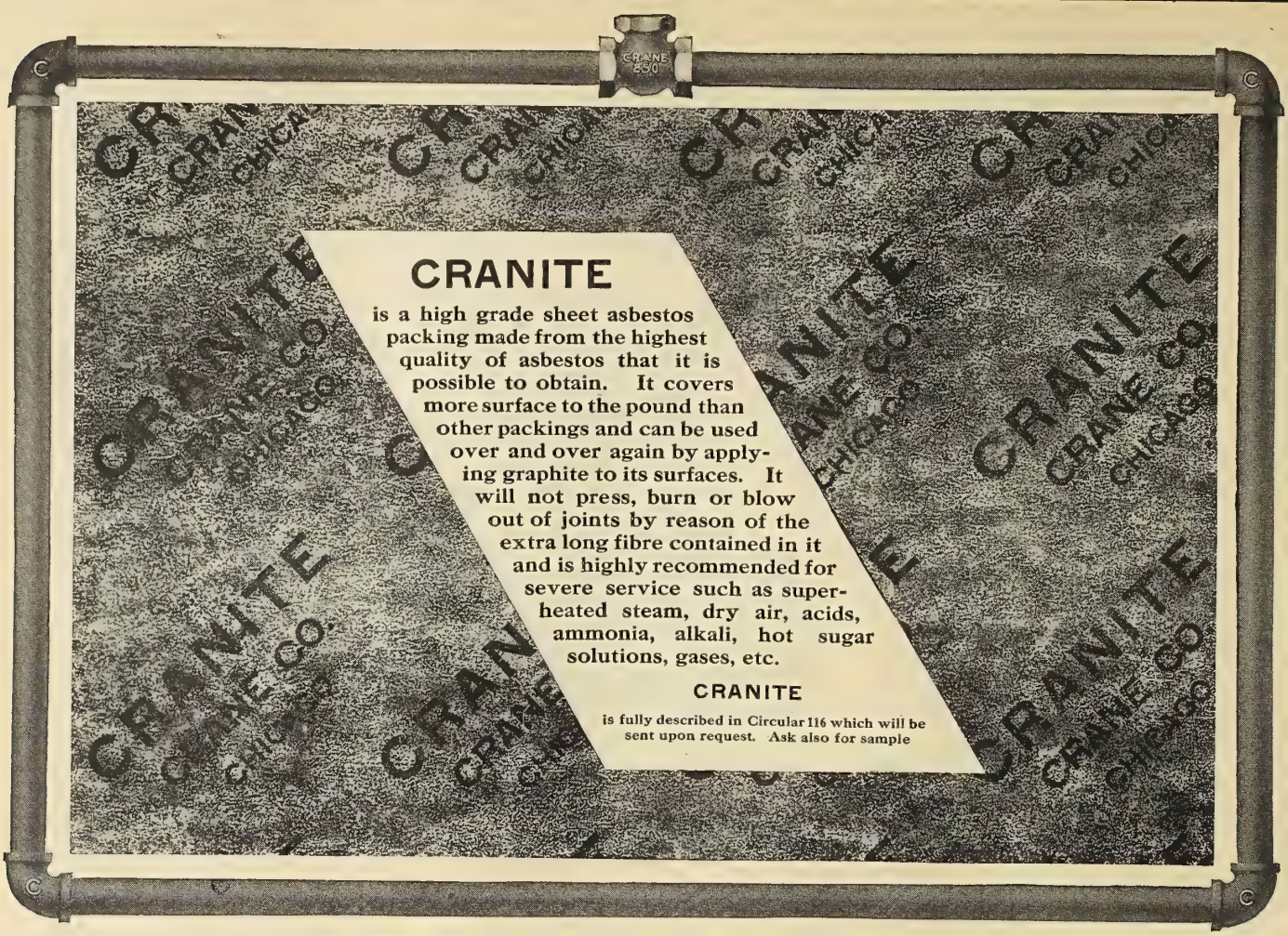
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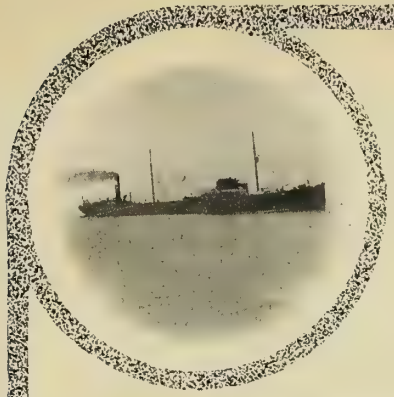

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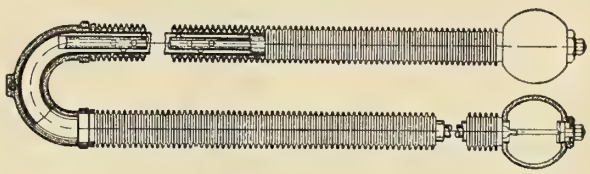

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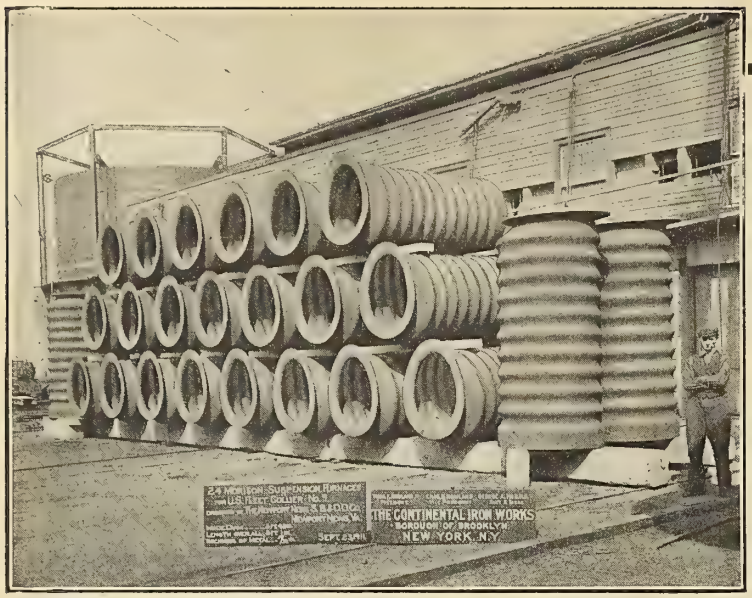

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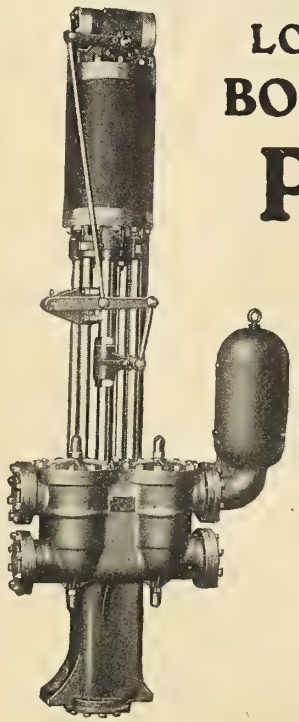

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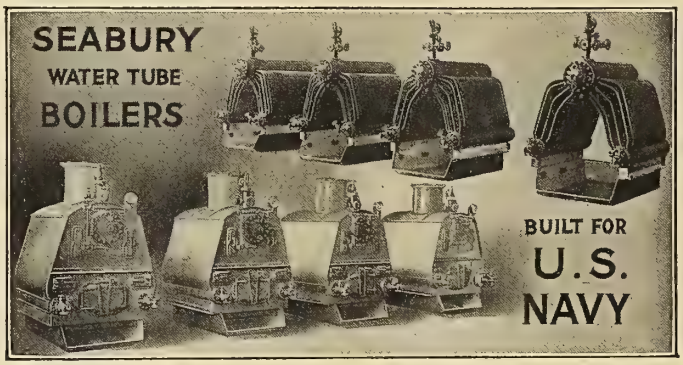

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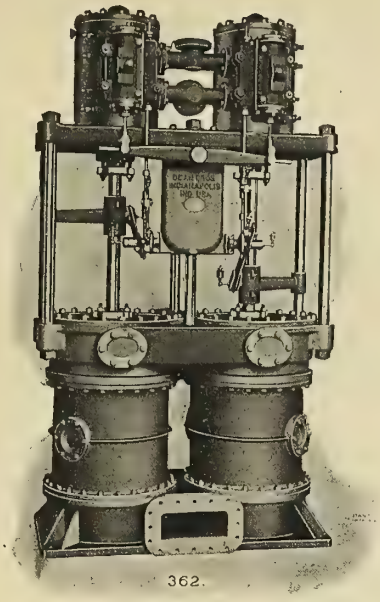

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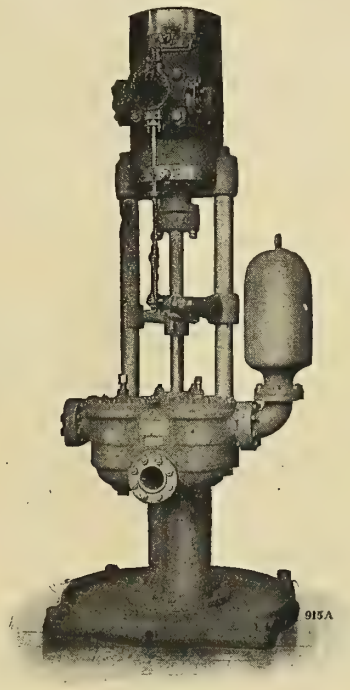

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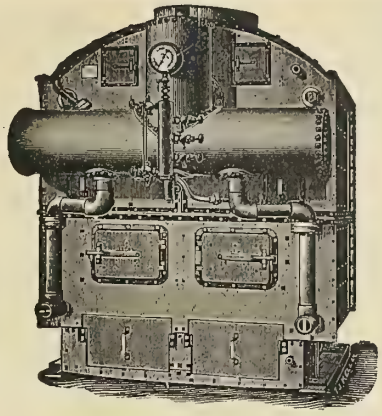

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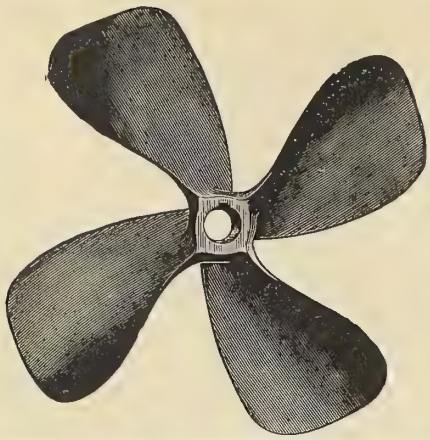

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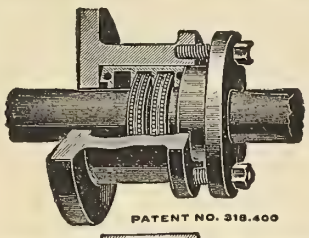

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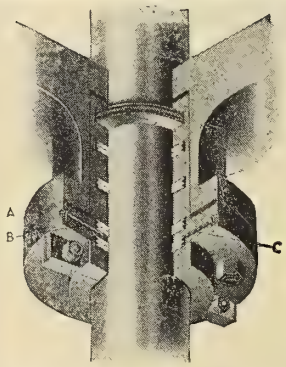

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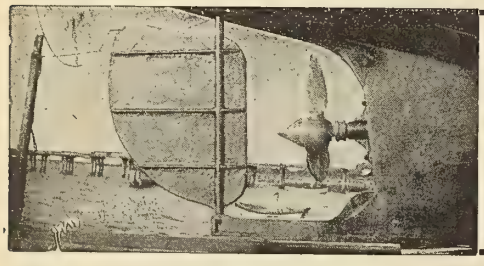

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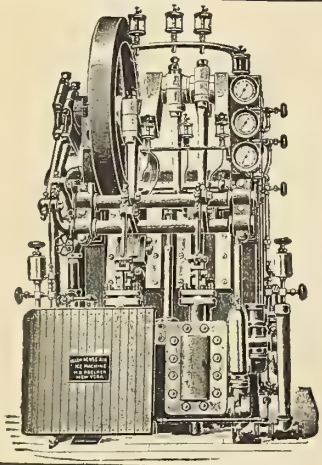

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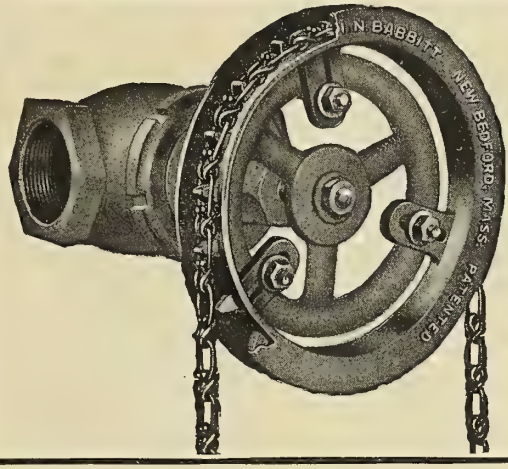

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Is SURE To Be In the RIGHT Place and CAN'T Slip

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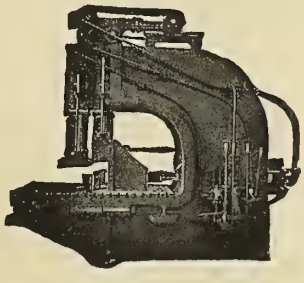

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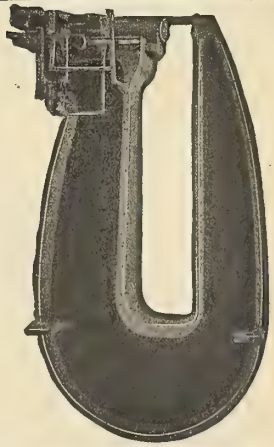

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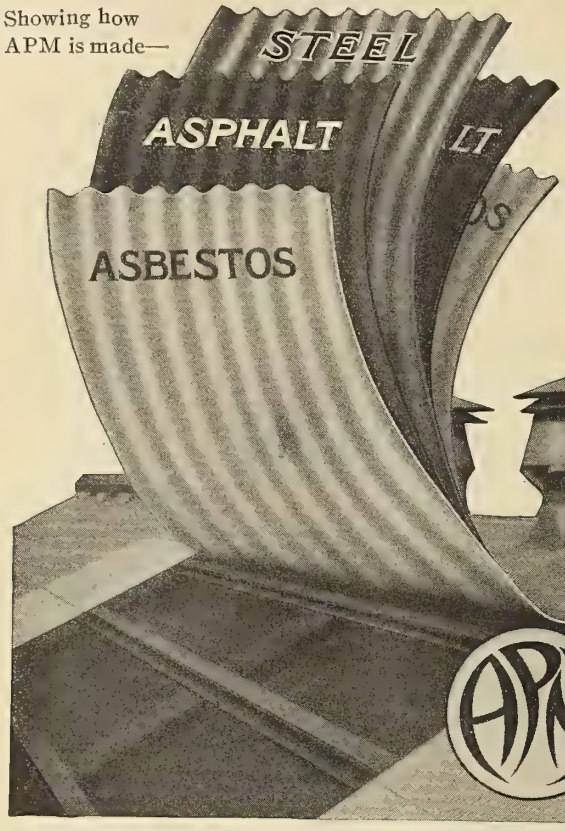

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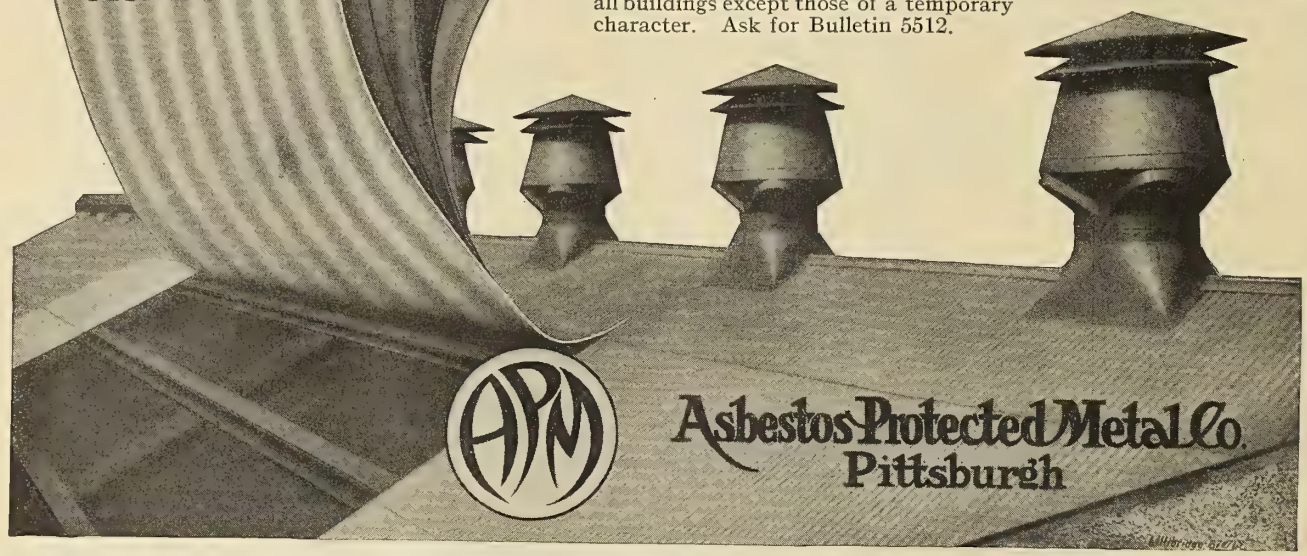

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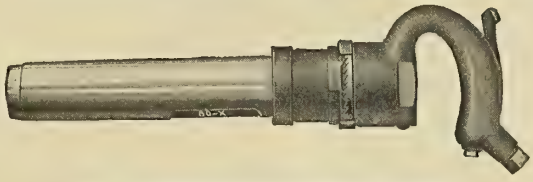

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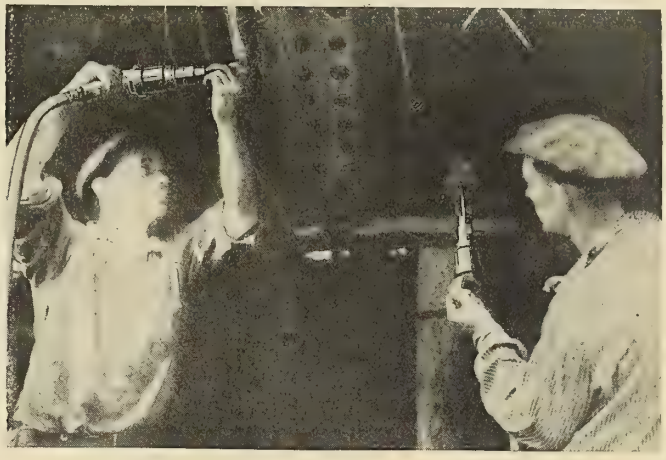

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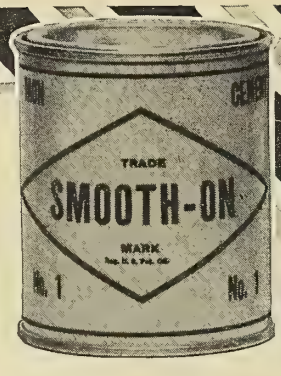

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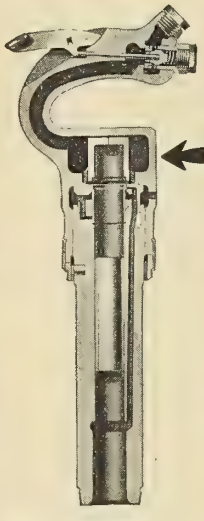

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Gives High Speed and Great Power

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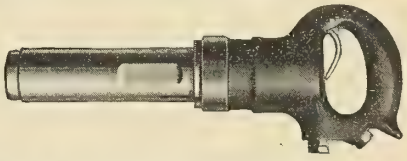

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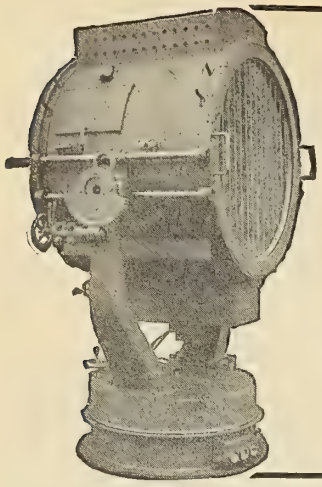

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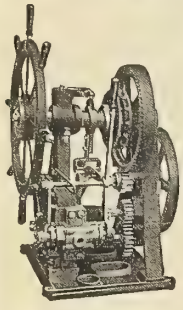

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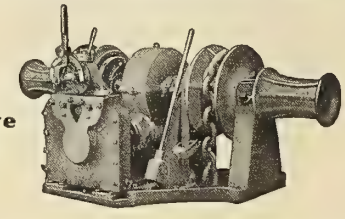

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Marine Heater

The express steamers, Great Northern, and Northern Pacific are equipped throughout with Sturtevant Heaters. The casings are both air-tight and water-tight so that they can be placed either on deck or inside. Foundation is such that it will withstand the corrosive action of salt water. Mixing dampers enable air of any desired final temperature to be obtained.

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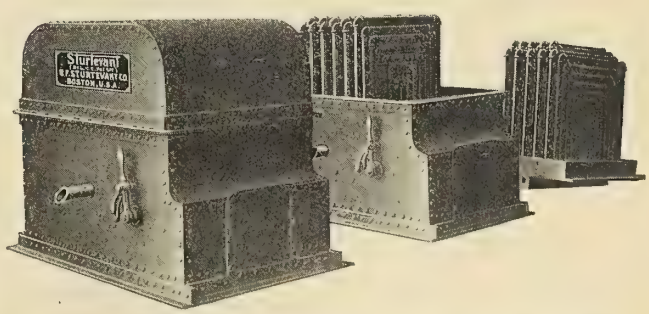
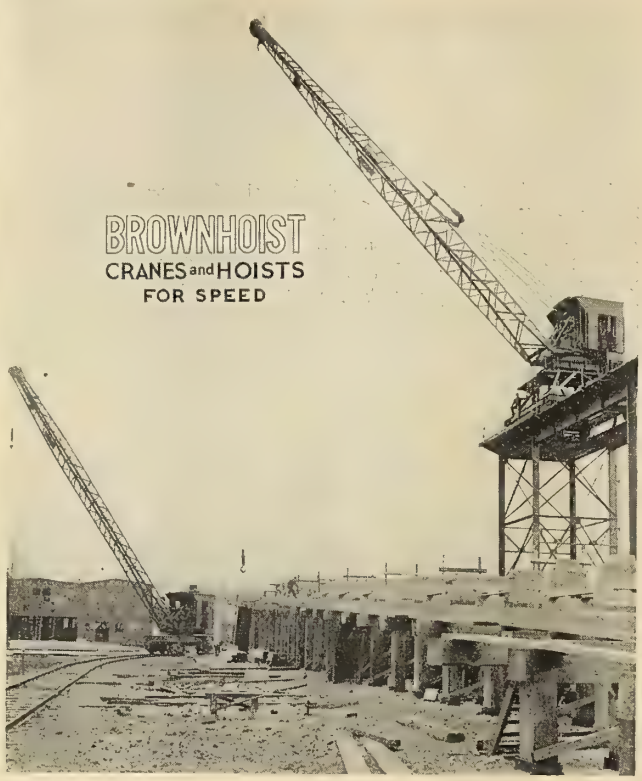


Marine Heater such is installed on Northern Pacific. Photo shows heater with top removed, assembled heater, and heating coils with base.



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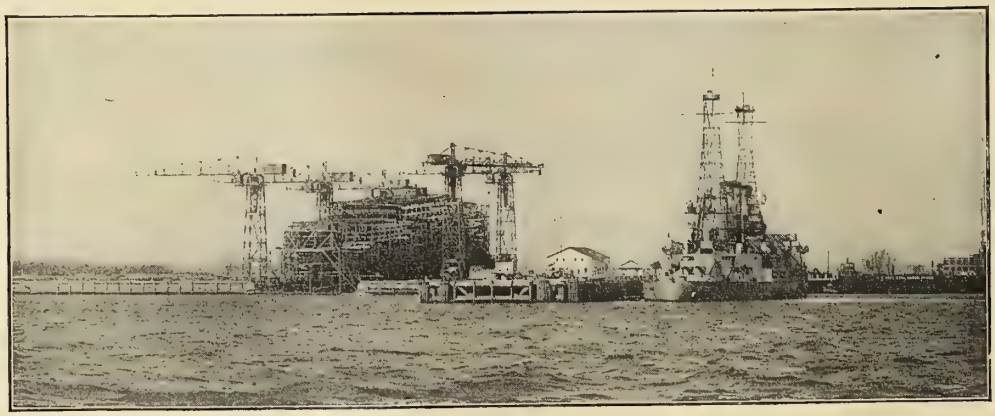

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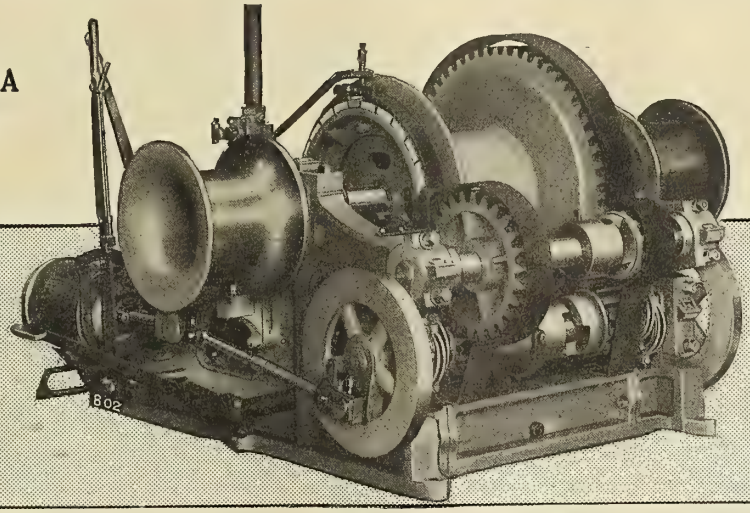

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have no terrors for the

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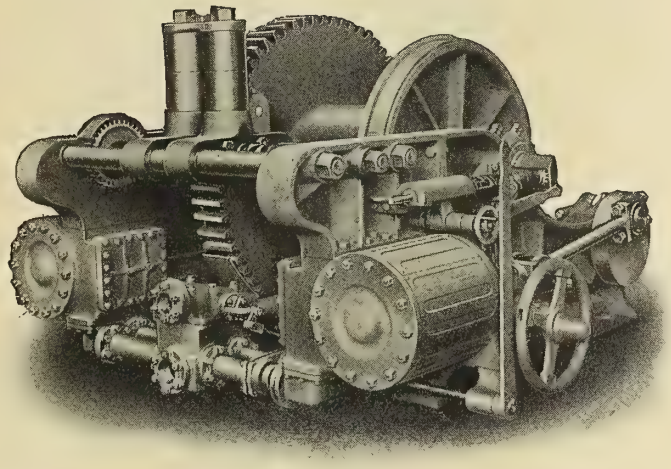

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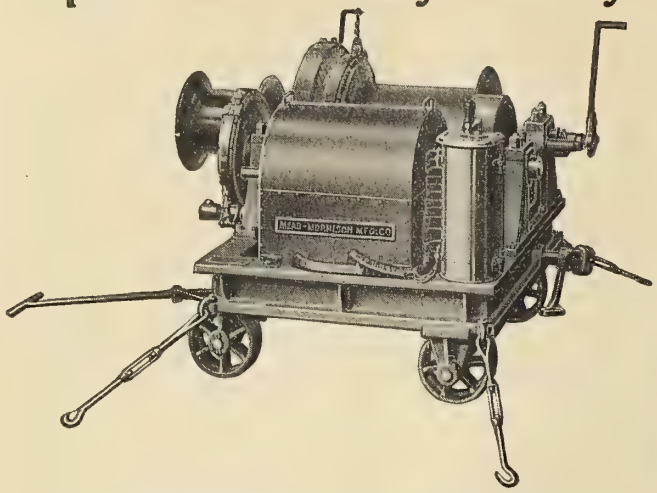

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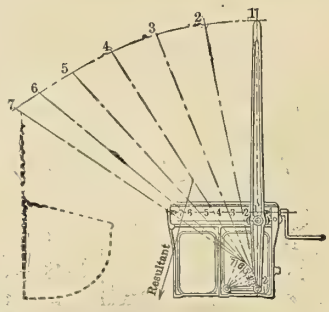

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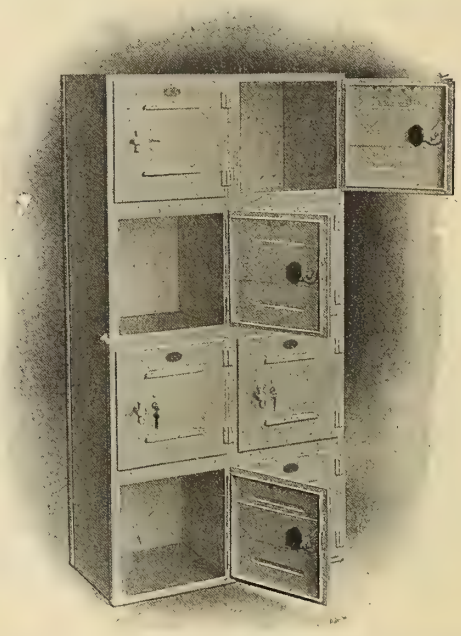

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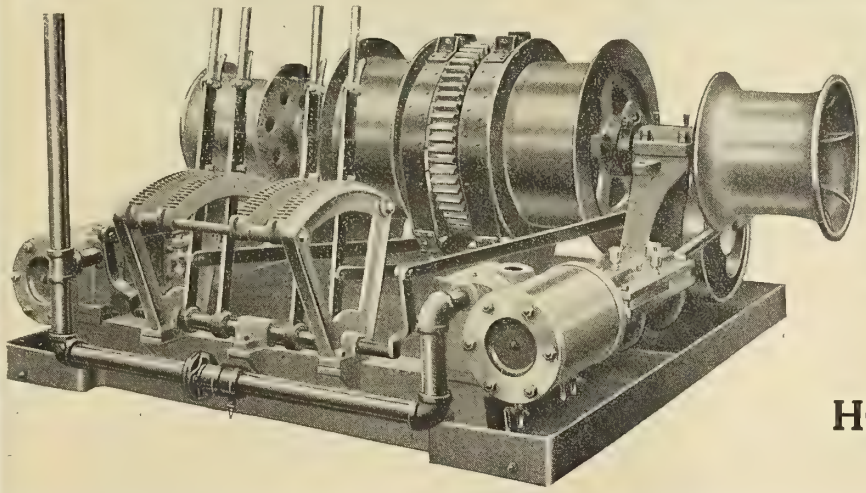

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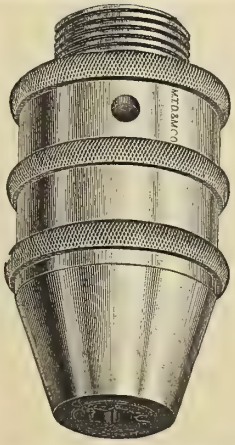

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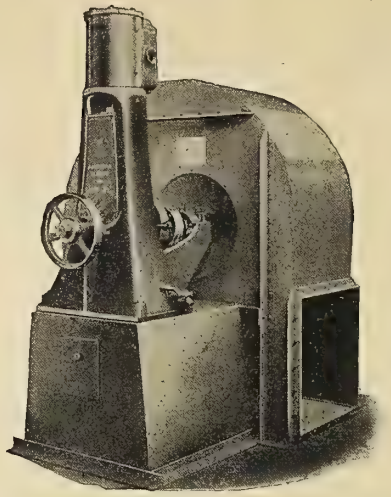

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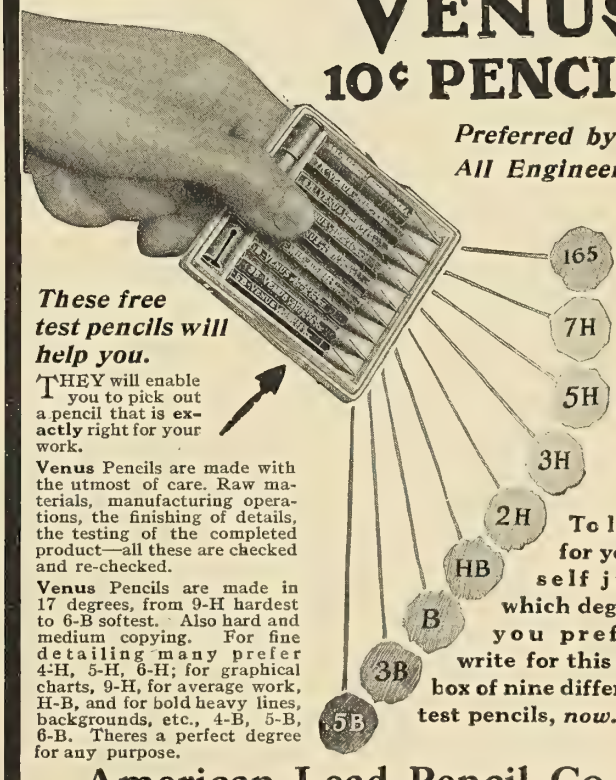

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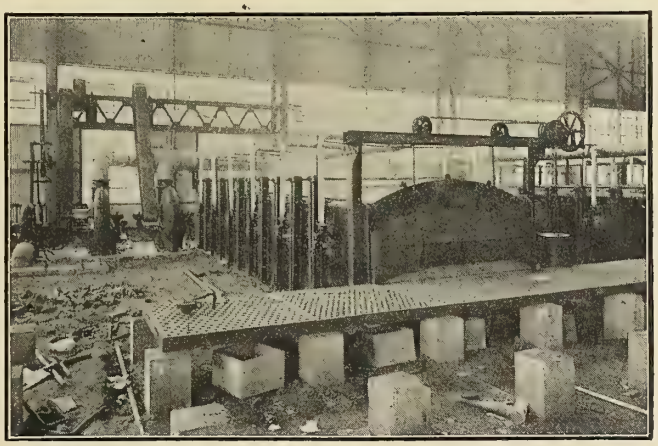

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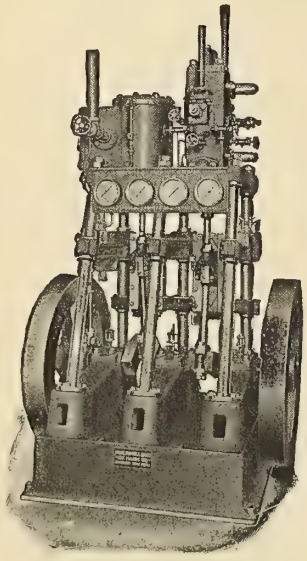

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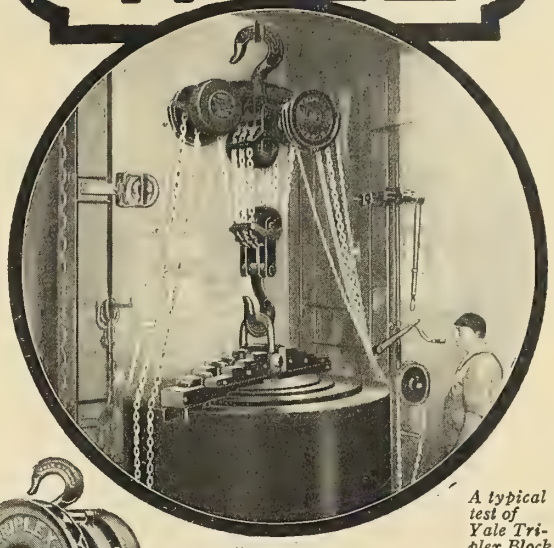

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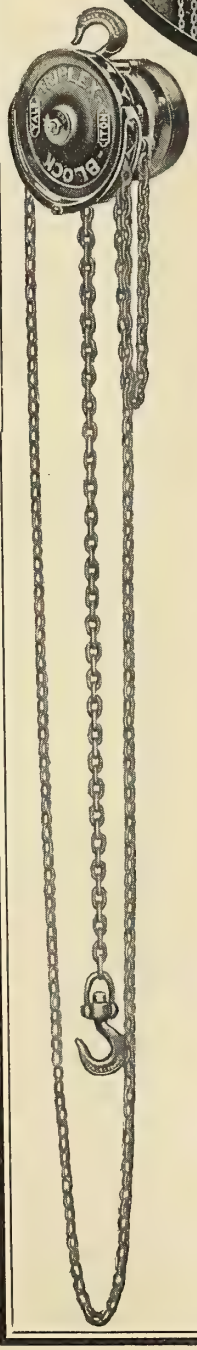

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in hoisting equipment. It embodies 40 years' of specialization, resulting in many features exclusively Yale.

Some of these features are:

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Yale Steel Chains of greatest strength and shock resisting qualities;

Yale line-of-steel construction, by which wrought steel not castings, support the load.

In our Physical and Chemical laboratories no experiment is too costly if permanent betterment and greater service and safety to the user may be developed.

And added to this, the completed product, which is tested and inspected during process to maintain quality, must pass the final test of 50% overload and the final inspection, before shipment can be made.

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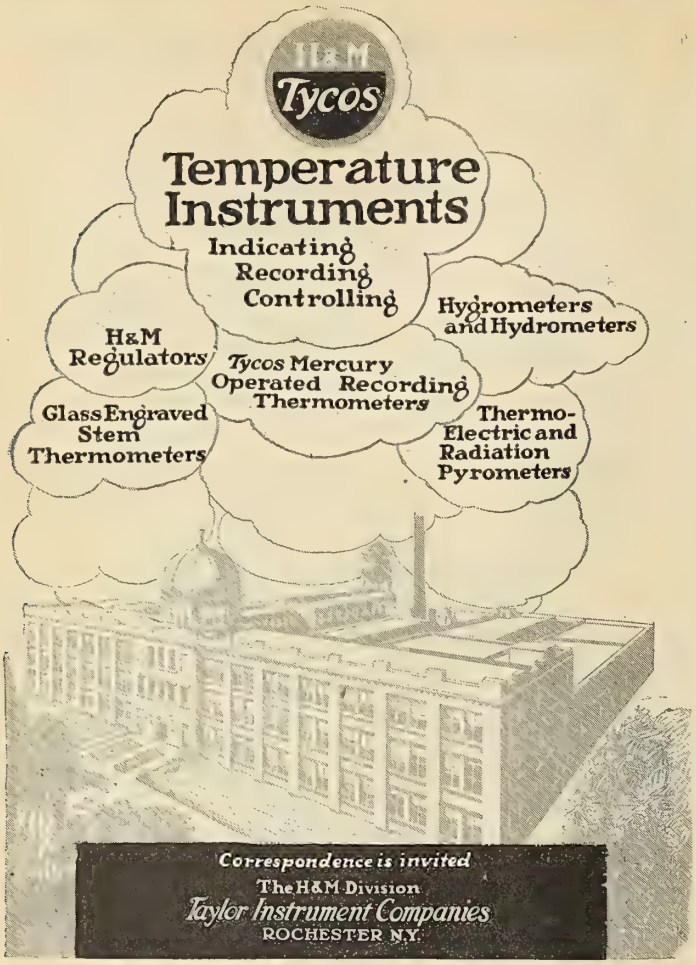

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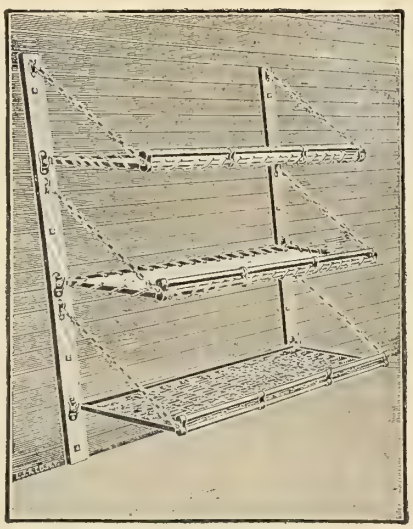

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Sturtevant Co., B. F.

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(See Electric Plants.)

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(See Fuel Economizers.)

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Schutte & Körting Co.
Williams, William E.

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Chicago Pneumatic Tool Co.
General Electric Co.
Independent Pneumatic Tool Co.
Williams, William E.

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(See Freight-Handling.)

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General Electric Co.
Williams, William E.

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American Engineering Co.
General Electric Co.
Hyde Windlass Co.
Lidgerwood Mfg. Co.
Mead-Morrison Mfg. Co.
Mundy, J. S., Hoisting Engine Co.
Niles-Bement-Pond Co.
Scully Steel & Iron Co.
Shepard Elec. Crane & Hoist Co.

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Engberg's Electric & Mechanical Works.
General Electric Co.

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Westinghouse Machine Co.

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General Electric Co.
Griscom-Russell Co.

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Weston Electrical Instrument Co.

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Cummings Ship Instrument Wks.
McNab Co., The.

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(See Packing.)

Engine-Room Clocks.
(See Clocks.)

Engine-Room Supplies.
(See Steam Specialties.)

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Bowes & Mower.
Cox & Stevens.
Donnelly, W. T.
Farley, Edward P., Co.
Griscom-Russell Co.
Hough, Edward S.
Shepard, Geo. C.
Union Dry Dock & Repair Co.
Watts, J. Murray.
Whittlesey & Whittlesey.
Young, Rakestraw & Ferguson.

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American Blower Co.
American Engineering Co.
Craig Engine & Machine Works, James.
De Laval Steam Turbine Co.
Engberg's Electric & Mechanical Works.
Gas Engine & Power Co. and Chas. L. Seabury & Co.
Hyde Windlass Co.
Kerr Turbine Co.
Mietz Machine Works, August.
New London Ship & Engine Co.
Southwark Fdy. & Machine Co.
Sturtevant Co., B. F.
Terry Steam Turbine Co.
Westinghouse Machine Co.

Engines, Gasoline.
(See Gasoline Engines.)

Engines, Hoisting.
(See Hoisting Engines.)

Engines, Kerosene.
(See Kerosene Engines.)

Engine Oil.
(See Lubricants.)

Engines, Oil.
(Also see Diesel Engines.)
Bolinder's Company.
Craig Engine & Machine Works, James.
Gas Engine & Power Co. and Chas. L. Seabury & Co., Consol.
Mietz Machine Works, August.
New London Ship & Engine Co.
Southwark Fdy. & Machine Co.
Standard Motor Construction Co.
Werkspoor.
Wolverine Motor Works.

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Bath Iron Works.
Bolinder's Company.
Craig Engine & Machine Works, James.
Fletcher, W. & A., Co.
Gas Engine & Power Co. and Chas. L. Seabury & Co., Consol.
Manitowoc Ship Building Co.
Mietz Machine Works, August.
Moore & Sons Corp., S. L.
New London Ship & Engine Co.
Parsons Mar. Steam Turbine Co.
Sheriffs Mfg. Co.
Southwark Fdy. & Machine Co.
Standard Motor Construction Co.
Trout, H. G., Co.
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Griscom-Russell Co.
Kerr Turbine Co.
Row & Davis, Engineers, Inc.
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Worthington Pump & Mach. Corp.

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American Engineering Co.
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Griscom-Russell Co.
Row & Davis, Engineers, Inc.
Schutte & Körting Co.

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(See Boiler Flue Expanders.)

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Crane Co.
Griscom-Russell Co.
Lunkenheimer Co.
National Tube Co.
Williams, William E.

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(See Blowers.)

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(See Valves.)

Feed Water Heaters.
Griscom-Russell Co.
Row & Davis, Engineers, Inc.

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Alberger Pump & Condenser Co.
Jerguson Gage & Valve Co.

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Nicholson File Co.

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Schutte & Körting Co.

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Morse, Andrew J., Son, Inc.
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(See Hose.)

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Asbestos Protected Metal Co.

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(See Lumber, Fireproof.)

Fire Pumps.
(See Pumps.)

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Lunkenheimer Co.
National Tube Co.
Scully Steel & Iron Co.
Williams Valve Co., D. T.
Williams, William E.

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Niles-Bement-Pond Co.

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(Also see Cranes.)
Manitowoc Ship Building & Dry Dock Co.

Floating Dry Docks.
(See Dry Docks.)

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Crane Co.
Scully Steel & Iron Co.

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(See Boiler Flue Cleaners.)

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(See Boiler Flue Cutters.)

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Covington Machine Co.

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General Electric Co.
Kerr Turbine Co.
Sturtevant Co., B. F.
Terry Steam Turbine Co.
Westinghouse Machine Co.

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(See also Drop Forgings.)
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Hyde Windlass Co.

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Mead-Morrison Mfg. Co.
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Smooth-On Mfg. Co.

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Wolverine Motor Works.

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Lunkenheimer Co.
National Tube Co.
Powell, Wm., Co.
Scully Steel & Iron Co.
Star Brass Mfg. Co.
Williams Valve Co., D. T.
Williams, William E.

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(See Marine Gas Producers.)

Gate Valves.
(See Valves.)

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Jerguson Gage & Valve Co.
Lunkenheimer Co.
Powell, Wm., Co.
Star Brass Mfg. Co.
Williams Valve Co., D. T.
Williams, William E.

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(See Steam Gauges.)

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Crane Co.
Jerguson Gage & Valve Co.
Lunkenheimer Co.
Williams Valve Co., D. T.
Williams, William E.

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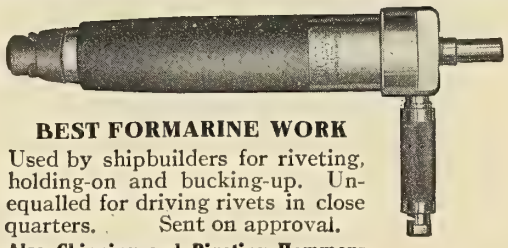

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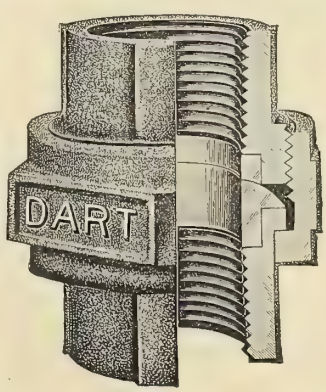

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Lunkenheimer Co.
Powell, Wm., Co.
Schutte & Körting Co.
Williams Valve Co., D. T.
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(See Valves.)

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(See Lubricators.)

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Lunkenheimer Co.
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Williams, William E.

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Powell Co., Wm.
Schutte & Körting Co.
Williams, William E.

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Greene, Tweed & Co.
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Crane Co.
Williams, William E.

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(See Attorneys, Patent.)

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Pipe Covering.
(See Non-Conducting Covering.)

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Lunkenheimer Co.
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Powell Co., The, Wm.
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Wiliams, William E.

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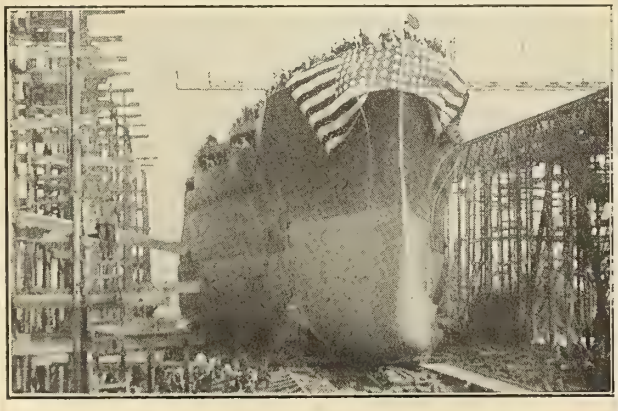

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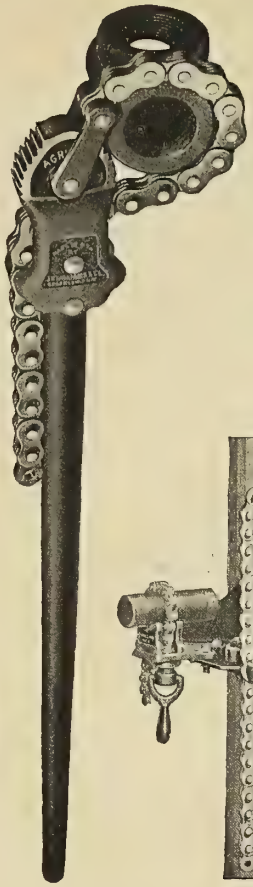

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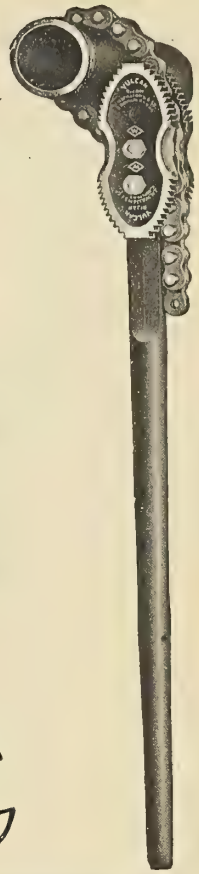

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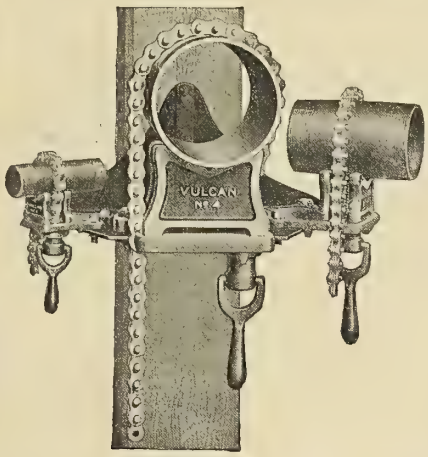

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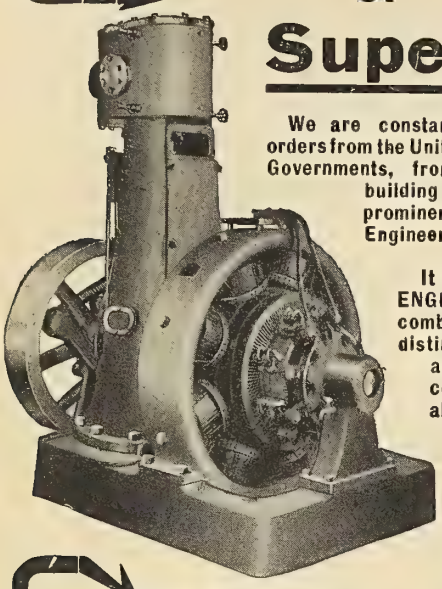

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NEW YORK

"The Coston Way"

of equipping round bar davits with reliable, economical and satisfactory

DAVIT TURNING GEAR

to comply with existing U. S. Requirements.

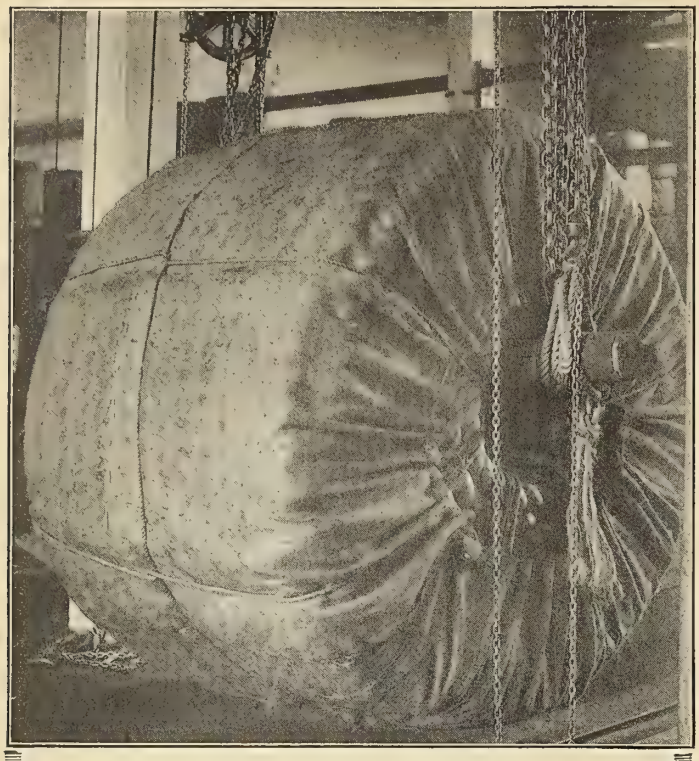
Approved by U. S. Inspection Service. Endorsed by leading shipowners who are using it. Light in weight.

Cost of installation nominal. No alterations required to existing davits—or decks or boats.

Write us for particulars.

COSTON SIGNAL COMPANY

24 Water Street New York



When the Hudson Bay Company's sugar-laden steamer "Sarina" needed a line last summer for towing the grain-laden barge "Avondale" across to France

PLYMOUTH TOWLINE

was called upon to do the work.

The picture shows the big two-hundred-and-fifty-fathom coil of twelve-inch Manila which we furnished for this job.

In every line of work there is always one brand which gets the preference among careful, far-sighted buyers—one brand which has the call on the biggest, hardest jobs. In towing, it's Plymouth Manila.

If you're not acquainted with Plymouth Manila, test it out on your next job. The harder the job, the better pleased we'll be, for difficulties simply emphasize Plymouth's superiority.

PLYMOUTH 1824

THE MARK OF LEADERSHIP

Plymouth Cordage Company

North Plymouth, - Mass.

Distributors in All Big Ports.

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INTERNATIONAL
MARINE ENGINEERING

DECEMBER, 1916

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LONDON
CHRISTOPHER STREET
FINSBURY SQUARE, E. C.

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NEW YORK
PRINTING CRAFTS BLDG.
461 EIGHTH AVENUE

Notice to Advertisers.—Changes to be made in copy, or in orders for advertising, must be in our hands not later than the 18th of the month, to insure the carrying out of such instructions in the issue of the month following. If proof is to be submitted, copy must be in our hands not later than the 15th of the month.

This magazine is member No. 448 of the Audit Bureau of Circulations.

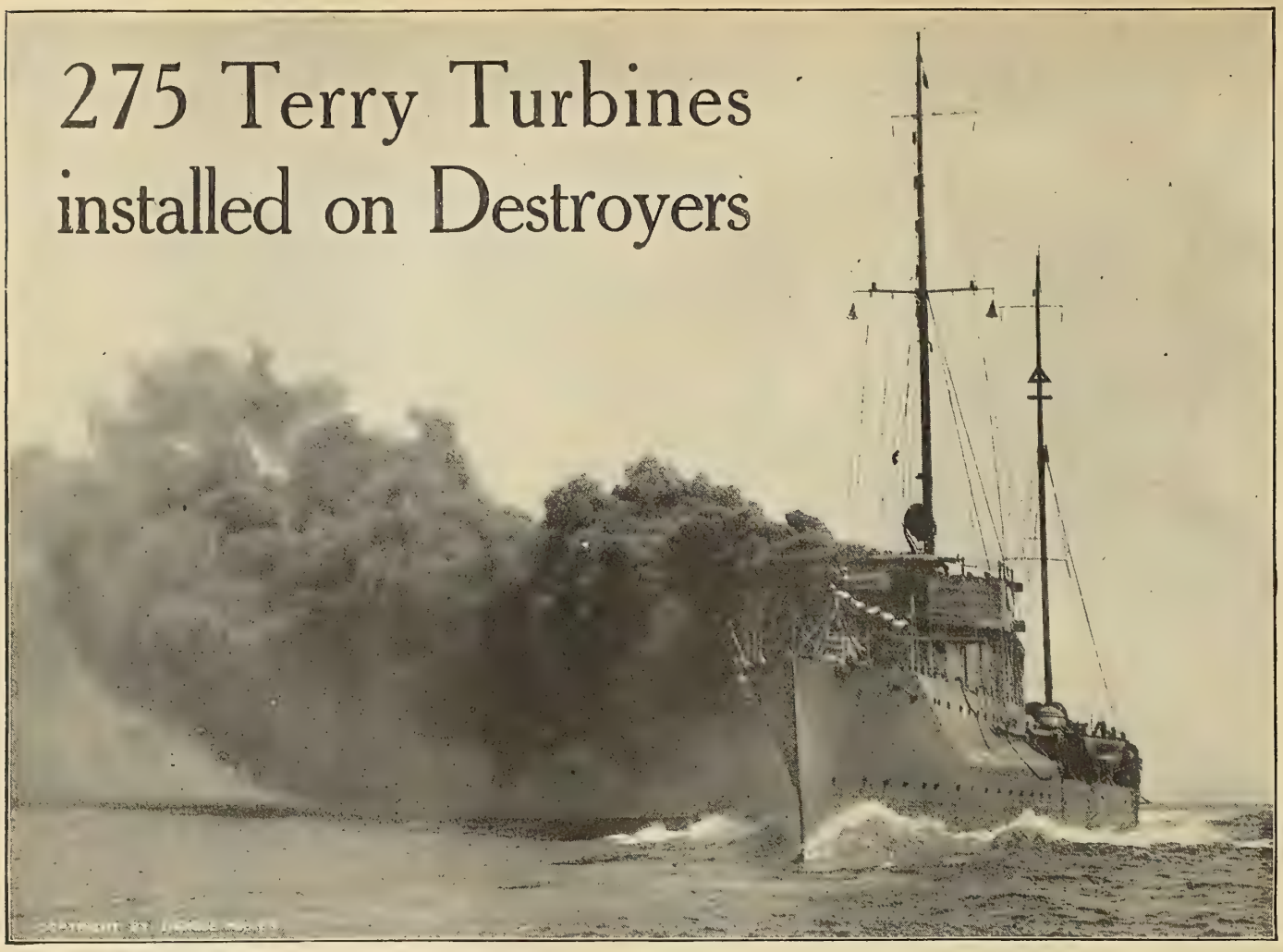
3,900 *copies of this issue were printed.*

MARINE ENGINEERING may be purchased at the following News Stands:

EASTERN HOTEL NEWS STAND, Whitehall and South Streets, New York
WHITEHALL BUILDING, 17 Battery Place, New York
PRODUCE EXCHANGE, Beaver Street, New York
FOSTER & OREAR, Ferry Building, San Francisco, Calif.

A REAL MANILA HAWSER
"COLUMBIAN" Manila Hawsers are the preferred towing lines. The wonderful elasticity of COLUMBIAN Hawser is obtained only through careful selection and preparation of the fibre,—and expert manufacturing.
The "COLUMBIAN" trade mark is a guarantee of long service as well as a name of a cordage Next time order long-wearing, springy Columbian lines.
COLUMBIAN ROPE CO., Auburn, "The Cordage City," New York
Branches: — NEW YORK — CHICAGO — BOSTON

275 Terry Turbines installed on Destroyers



SIMPLE construction, reliable operation, and high efficiency at low speeds are all qualities that are highly desirable in auxiliary turbines on shipboard.

The first turbines in which these qualities were combined were manufactured under the Terry patents, the validity of which has recently been sustained by the Court of Appeals.

Because these qualities could be found in no other turbine, the drive selected for destroyer blowers by the U. S. Navy has almost invariably been

THE TERRY TURBINE

IN ADDITION to about 150 Terrys used on U. S. Destroyers there are about as many more used on U. S. Battleships, and a large number in foreign navies.

Terry Turbines are specially desirable for driving generators, blowers and pumps. Our nearest office will gladly give further information.

The Terry Steam Turbine Co.

Main Office and Works, HARTFORD, CONNECTICUT

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Atlanta Boston Birmingham Charlotte Chicago Cleveland Dallas Denver Grand Rapids Houston Knoxville Los Angeles Memphis Minneapolis New Orleans New York Philadelphia Pittsburgh Richmond San Antonio San Francisco St. Louis Seattle Montreal Toronto

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T-355

INTERNATIONAL MARINE ENGINEERING

Main Office: NEW YORK, 17 Battery Place SUBSCRIPTION PRICE: Domestic, $2.00; Foreign, $2.50 LONDON OFFICE: 31 Christopher St., E. C.

Asbestos Protected Metal

for Roofing and Siding

IT IS as light as sheet steel, but is PERMANENT. It is low in first cost and involves no maintenance or depreciation charges. It is rust-proof and fire-resisting, and does not need paint.

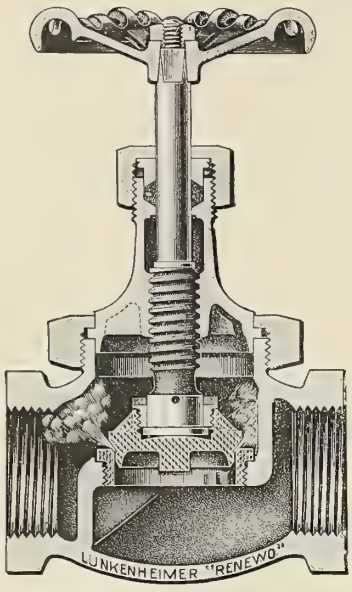
It is Steel + Asphalt + Asbestos

Steel is light, but strong. Asphalt entirely envelopes the steel and preserves it against rust and corrosion. The outer layer of hardened, water-proofed Asbestos in turn protects the Asphalt from heat and light, elements which quickly destroy its usefulness.

Bulletin 5512 describes and illustrates the application of A P M on piers, docks, warehouses and other buildings where the conditions of service are severe. Ask for a copy.

Asbestos Protected Metal Company
Pittsburgh

LUNKENHEIMER



"Renewo" Valves

"The economical Valves for severe service"

The uninterrupted service these valves give, recommends their installation, particularly where severe operating conditions exist.

All parts are renewable, and this includes the **nickel-seat ring** and **disc.**

Seating surfaces are regrindable.

Lunkenheimer "Seat-guard,"—the tubular extension on the bottom of the disc, materially aids in preserving the seating faces and keeping them clean. Passages through the bodies are full and unobstructed, the smallest area being in excess of that of the nominal diameter of the connecting pipe.

Materials used are the highest grade. Workmanship is Lunkenheimer "Quality."

Lunkenheimer "Renewo" Valves are made in sizes ¼ to 3 inches inclusive (Inside Screw), and sizes 1½ to 3 inches inclusive (Outside Screw and Yoke), in two patterns—Medium for 200 pounds and Extra Heavy for 300 pounds working steam pressure.

"BUY THE BEST—THEY ARE THE CHEAPEST."

Ask your dealer for booklet No. 535, or for Red Book No. 50.

THE LUNKENHEIMER CO.

"QUALITY"

Largest Manufacturers of High Grade Engineering Specialties in the World.

NEW YORK CHICAGO **CINCINNATI** BOSTON LONDON

Awarded ***Medal of Honor*** *Panama-Pacific International Exposition and* ***Grand Prize*** *Panama-California Exposition.*

1-6-25

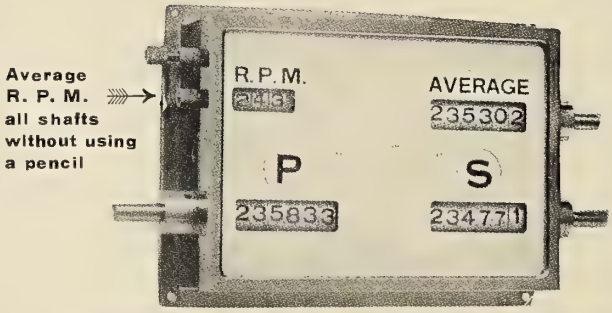
HYDE WINDLASS COMPANY

Manufacturers of

Windlasses, Steering Gears, Winches, Capstans, Hand, Steam and Electric, and other Marine Auxiliaries.

Main Office and Works:

BATH, MAINE



CUMMINGS TWO-SHAFT AVERAGING COUNTER

Ideal Counter for Turbine Engines

Made for ships with 3 and 4 shafts also

Installed in more than 100 ships

Dimensions $11\,^{3}/_{4}'' \times 8\,^{3}/_{4}'' \times 3\,^{7}/_{16}''$

Weight . . . . . 23 lbs.

Send for our pamphlet on the Cummings Engine Log System or the Gary-Cummings Torsion Meter.

Cummings Ship Instrument Works

110 High Street, Boston, U. S. A.

International Marine Engineering

JANUARY, 1916

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LONDON
CHRISTOPHER STREET
FINSBURY SQUARE, E. C.

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NEW YORK
WHITEHALL BUILDING
17 BATTERY PLACE

Notice to Advertisers.—Changes to be made in copy, or in orders for advertising, must be in our hands not later than the 20th of the month, to insure the carrying out of such instructions in the issue of the month following. If proof is to be submitted, copy must be in our hands not later than the 15th of the month.

INTERNATIONAL MARINE ENGINEERING *is member No. 448 of the Audit Bureau of Circulations.*

3,900 copies of this issue were printed.

When you want really good rope—ask for

COLUMBIAN PURE MANILA

Better get it while in port

COLUMBIAN ROPE CO., - AUBURN, N. Y.

NEW YORK
62 South St.

CHICAGO
370 River St.

BOSTON
13 Beverly St.

COLUMBIAN PURE MANILA

WHAT'S A TURBINE?

What's a turbine engine? It is what it is, is it not? But are you aware that there is as much difference in turbine engines as there is in reciprocating engines? And reciprocating engines have served mankind faithfully for years—as the horse did before the era of automobiles. The horse is now in the discard, and the reciprocating engine is getting there; that is, some of them, for many can't forget the old love. Nevertheless, the turbine is coming to the front faster each year; simply—it has a mission to perform in the new era of manufacturing. Efficiency is what counts to-day, and machinery is getting to be just as important as the mental efficiency that makes mankind move forward a peg in the march of progress.

Again let us ask the question: "What's a turbine engine?" And having asked the question, let us ask how many up-to-date owners and plant managers can give an off-hand answer that will explain the principle of such a steam engine? Precious few. Yet it is one of the engines of the near future from which the power will flow that brings the dividends to the stockholders in all of our manufacturing plants. All managers are after dividends, but not all take advantage of everything that helps to bring them about, outside of their knowledge of men and manufacturing machinery. Yet for lack of the proper power plant equipment millions of dollars are wasted into smoke and steam that could readily be turned into the dividend account. Only recently we heard of a case where an engineer who knew his business made a saving of 20 per cent, in his coal pile through convincing the manager that he ought to provide certain improvements to save money. Outside of that, an inefficient engine is just as bad practice as an inefficient man. You can easily replace an inefficient man, but it costs money to replace an inefficient engine. Just as surely as the automobile is an improvement on horse locomotion, so is the steam turbine an improvement on the reciprocating engine. And if you know nothing about turbines and their value to turn the wheels of your machinery, then get busy and send for the booklet of the Terry Steam Turbine Co. of Hartford, Conn. It will tell you more in five minutes about turbines than you have probably known in five years, unless you are up-to-date and coming.

Be up to the minute, get the knowledge that is free and learn besides what a Terry turbine engine really is. It's your duty, pure and simple, knowledge is power, and power comes from knowledge. Get the power, through a Terry turbine and the booklet of practical information they give you for the asking.

The Terry Steam Turbine Co.

HARTFORD, CONN.

Atlanta, Boston, Birmingham, Charlotte, Chicago, Cleveland, Dallas, Dayton, Denver, Grand Rapids, Houston, Lynchburg, Memphis, New York, New Orleans, Philadelphia, Pittsburgh, San Antonio, San Francisco, St. Louis, Seattle, St. Paul, Montreal, Toronto, Havana, Cuba, London, England, Johannesburg, So. Africa, Melbourne, Australia

T328

TRADE PUBLICATIONS

The "White Star" valve is the subject of a 20-page book just issued by the William Powell Company, Cincinnati, Ohio. This booklet discusses the function of the "White Star" valve and illustrates in section the several types made by the William Powell Company. The booklet also contains full information as to construction, operation and prices. Copies will be sent free to any of our readers upon request.

A metallic power lifeboat is illustrated in a circular just published by the C. M. Lane Lifeboat Company, 246 Huron street, Brooklyn, N. Y. This lifeboat is described as follows: "This boat was built by the C. M. Lane Lifeboat Company from approved specifications of the Board of Supervising Inspectors. A 12-16 horsepower Frisbie valve-in-head motor drives this boat eight miles per hour, carrying the required number of passengers, and without noticeable vibration. Independent air tanks, securely installed, will float the boat, engine and passengers when intermittingly submerged. For quality and efficiency specify the C. M. Lane Lifeboat Company's metallic lifeboats, their pontoon lifeboats, pontoon life rafts and power lifeboats, approved to pass the latest rules and regulations of the United States Board of Supervising Inspectors."

Asbestos protected metal for use on steamship docks, piers and warehouses is described in Bulletin 55 just published by the Asbestos Protected Metal Company, First National Bank Building, Pittsburg, Pa. Among the illustrations in this bulletin are some docks and warehouses belonging to the Pennsylvania Railroad Company, the Northern Central Railroad Company, and others, the roofing and siding material of which is made of asbestos protected metal. "Such concerns as are here represented must have buildings that last—permanent construction with the minimum maintenance expense. For that reason A P M was selected—it forms a light, durable and thoroughly practical roofing and siding material for all kinds of buildings. Bulletin 55 offers more complete evidence of the performance of A P M under all sorts of service conditions. Ask for a copy and a sample of the product."

Plate planers are the subject of a catalogue published by the Covington Machine Co., 82 Wall street, New York. The Covington Machine Company also makes punches, shears, bending rolls and other tools and machines for use in boiler shops.

Brushes of all kinds, especially designed for use in the marine field, are described in the catalogue recently published by the John L. Whiting-J. J. Adams Company, 690-710 Harrison avenue, Boston, Mass. A copy will be sent free to any of our readers on request.

Universal non-packing valves for high-pressure steam, either saturated or superheated, are described in a booklet just published by the Universal Valve Company, 910 South Michigan avenue, Chicago, Ill. The following is an extract from this circular: "Many attempts have been made to produce packless valves and a limited success has been achieved with them under very low steam pressure. But the Universal valve is the first one able to meet the severe conditions of high-pressure steam. The principle of its construction makes packing unnecessary and a leaky valve stem physically impossible."

The Cochran pipe wrench is described in a circular just published by the Cochran Pipe Wrench Manufacturing Company, 7800 Woodlawn avenue, Chicago, Ill. The frame and handle are one solid piece. Rocker with compression strain in our wrench replaces pin with shearing strain in other makes. Guaranteed not to crush nor lock on pipe. Perfect grip and release. Cannot be injured by side pull owing to its solid-frame construction. Jaws drop forged from highest grade of tool steel adapted to the use of wrenches."

Blake pumping machinery is the subject of a circular published by the marine department of the Blake & Knowles Steam Pump Works, 115 Broadway, New York. The battleship *Nevada*, the latest and most formidable dreadnought of the United States navy, is equipped with Blake pumping machinery, covering every service requirement of the ship. The Blake & Knowles Steam Pump Works states that in addition to this *Nevada* equipment, it is to be noted that more than 90 percent of all ships built for the United States navy since the time of the Civil War have been equipped with Blake pumps.

Recovery of Oleite

WE have already stated that once Oleite seizes upon oil it cannot be made to let go of it except by burning. There are two or three ways of doing this very conveniently but this advertisement has no space to describe them.

A frequent question is: "How many times can Oleite be reburned?" We frankly say that we do not know. That it can be reburned anywhere from 6 to 10 times is certain. The point is that the Oleite suffers no deterioration in the burning, except that a certain amount of it crumbles up so fine that it is unfit for use and is fortunately lost in the handling. There is therefore a small "make up" of fresh Oleite each time. This is the measure of the loss, but nobody seems to keep any record of it. For the convenience of our customers we intend in the near future to begin shipping Oleite in cans. When the Oleite is saturated it can be emptied into the same cans and returned to us for reburning—a double quantity being kept on hand by the customer—just like having two pairs of pants for pressing! If experience proves this to be a real convenience we shall establish at least three points, respectively in the east, west and south, where this service can be conveniently rendered. Due announcement will be made.

LEITE TRADE MARK

Our Bulletins give further information.

You can assist us greatly in our publicity work by referring to this advertisement as D10. Our thanks in advance.

WILLIAM ANDREWS, Inc.

120 Liberty Street, NEW YORK

We want a live representative in every city.

Punches, shears, bending rolls, etc., are described by the Covington Machine Company, 14 Wall street, New York, in bulletin No. 11, which has just been published. The Covington Machine Company builds a complete line of fabricating tools for sheet metal, structural shapes, merchant bars, etc., and will build machines to meet special requirements.

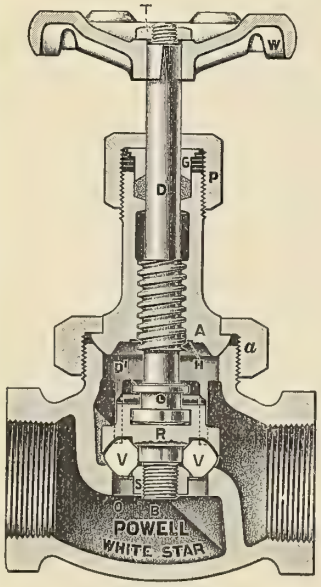
A new blow-off valve, especially designed for marine service, has been placed on the market by the Scully Steel & Iron Company, Chicago, Ill., and is the subject of a circular the company has just issued. These valves are stated to be extra heavy in construction and to pass government inspection. There is no stuffing box, therefore no packing or repairing. They are said to be self-cleaning, self-grinding and not to stick. They are "guaranteed drop-tight for two years or money refunded."

"The Quality Idea at Work" is the title of one of the articles published in the November issue of "Plymouth Products," which is issued by the Plymouth Cordage Company, North Plymouth, Mass. "When a dredging concern has operations extending from New York harbor to Portland, Me., and is working two big dredges, five tugs and eighteen scows on a single job, you can well imagine that its rope orders run into a good deal of money. And you can figure that those orders are going to call for the rope which will yield the biggest return in service. Since the first of the present year the Morris & Cumings Dredging Company, of New York City, has purchased for its various needs miles and miles of Plymouth cordage, and practically every foot of it, we are glad to state, has been our Manila Bolt Rope. When such a concern pays a premium for rope which is to be used largely on such work as tying up and towing mud scows—and does it not merely once or twice but right along—you can be absolutely sure that there really is something to this idea of a high-quality rope paying best in the long run. The same feeling which prompts Morris & Cumings to use our Bolt Rope prompts still other buyers to use regular Plymouth Manila who have previously bought only the cheaper brands of rope has of late, too, greatly lessened the vogue of 'hardware grade' and of its once-popular companions 'second' and 'third.'"

Lunkenheimer "Renewo" valves for marine use are described in booklet No. 535 and in Red Book No. 50, which the Lunkenheimer Company, Cincinnati, Ohio, has just issued. These valves are made in sizes ¼ inch to 3 inches, inclusive (inside screw), and sizes 1½ inches to 3 inches, inclusive (outside screw and yoke), in two patterns—medium for 200 pounds and extra heavy for 300 pounds working steam pressure.

"The Terry Turbine" is the title of an eight-page booklet just published by the Terry Steam Turbine Company, Hartford, Conn. This bulletin gives a general description of various Terry turbine applications, and deals particularly with high, light and mixed pressure turbines. "Ever since the first Terry turbine was put on the market, some ten years ago, the aim has been towards perfection in design rather than cheapening the cost of production. High operating efficiency, long life and accessibility have been considered of more value than first cost. Short-shaft span is obtained by the single wheel in the non-condensing machine and by the use of a composite design for condensing service. This, combined with large shaft diameters, brings the critical speed well above any operating or test speed and eliminates all possibility of whipping. The moderate weight of the rotating element and the long bearings result in low-bearing duties. High-pressure steam is confined to a small chamber at one end of the machine, and the casing being subjected to exhaust pressure and temperature only is in reality a portion of the exhaust piping, and is thus relieved of any appreciable strains. As a result of this low pressure, packing or gland troubles are reduced to a minimum and the low-casing temperature is of particular advantage in maintaining alignment. The casing, bearings, housings and diaphragms (when used) are split on the center line, affording immediate access to every part without disturbing alignment or any pipe connections. About 2,500 Terry turbines are now in operation in all parts of the world, including approximately 400 in the United States and foreign navies, and the large number of machines which have been in constant operation from five to ten years bear witness to the reliability, efficiency and long life of the Terry turbine."

ESTABLISHED IN 1846



"WHITE STAR" VALVE BOOKLET ON REQUEST

POWELL VALVES

(Especially The "White Star" Valve)

MR. ENGINEER:

More than three wise men and numerous others, have used the Powell "White Star" Valves. Our reputation for quality is always maintained by our superior manufacturing facilities which enable us to fill every requirement.

Ask your Dealer for "Powell Valves," or write us

THE WM. POWELL CO.

DEPENDABLE ENGINEERING SPECIALTIES.

CINCINNATI, O.

DIXON'S
SILICA GRAPHITE PAINT

Gives
LONGEST SERVICE
For
hatches, smokestacks,
interior of hulls, boiler
fronts, etc.

Made in
FIRST QUALITY ONLY
for fifty years.

Let us serve you.

JOSEPH DIXON CRUCIBLE CO.

Jersey City, N. J.

ESTABLISHED 1827

B-96

Wiring devices are the subject of a profusely illustrated and handsomely printed catalogue of 168 pages, which has just been published by the Bryant Electric Company, Bridgeport, Conn. The value of this catalogue is much enhanced by a 14-page index to catalogue numbers.

"Sirocco" fans for naval use are described in Marine Series Booklet No. 15, published by the Marine Department of the American Blower Company, 141 Broadway, New York. Almost every navy in the world uses Sirocco fans for some air-handling purposes—forced draft, hold ventilation, etc. The United States ships *Delaware, Florida, Utah, North Dakota,* the torpedo boat destroyers *Walke, Perkins* and *Monaghan* are equipped with Sirocco fans, as are also many of the auxiliary ships belonging to the United States navy.

Direct-connected dynamos and engines are described by the Engberg's Electrical & Mechanical Works, 16 Vine street, St. Joseph, Mich., in a circular the company has just published. "Engberg direct-connected generating sets can be furnished in direct current from 1 to 50 K. W. and in alternating current from 12½ to 125 KVA. They are the result of excellent design, selected material, accurate workmanship, and seventeen years' experience in dynamo and engine-building. An investigation and study of the descriptive bulletins will convince the most adverse opponent."

An interesting picture. In a circular just published, the C. M. Lane Lifeboat Company, 246 Huron street, Brooklyn, N. Y., gives an illustration showing the condition of a metallic lifeboat, which, after saving everyone on board a steamer sunk in the Atlantic, and drifting over a month after the accident, was then picked up and brought to the shops for repairs. This boat was built by the C. M. Lane Lifeboat Company, from approved specifications of the Board of Supervising Inspectors. The sharp dents received bear witness to a terrific banging, but notwithstanding, the boat was still serviceable.

J-M high temperature cement is described in a circular published by the H. W. Johns-Manville Company, Madison avenue and Forty-first street, New York. The following is an extract from this bulletin: "The real function of a firebrick setting is to confine the heat of the fire to a certain definite location. Unfortunately, the material of which firebrick is made has no inherent strength to withstand the stress of contraction and expansion and must fail, through disintegration or spawling, where heating is excessive. It is in correcting these well-known proven defects of firebrick that J-M heat treatment saves money in lengthening the life of firebrick settings. First, by protecting the firebrick edges against the destructive effect of flames by using No. 31 High Temperature Cement as a bond between firebrick courses. This cement vitrifies at a low furnace temperature and forms a solid wall of cement and firebrick. Second, by painting the entire face of the new setting with J-M No. 32 High Temperature Cement all the natural pores, blisters and cracks in the brick are filled up, preventing disintegration caused by temperature variations. Your nearest J-M branch will furnish these cements for your next job."

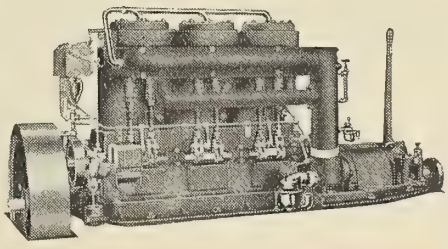
Waugh Glazing Construction is the title of Bulletin 56, just published by the Asbestos Protected Metal Company, First National Bank Building, Pittsburg, Pa. This construction is claimed to be especially suitable for use on steamship piers, warehouses, etc. The introduction to the bulletin reads as follows: "The lighting of any enclosed area has a direct effect upon all operations that are carried on therein. Upon the lighting depend largely the temper and health of the occupants, the quality and quantity of their work and the degree of order and cleanliness that is maintained. Owners and industrial engineers are giving this matter more attention, and practically all agree that the best form of day lighting is obtained from the roof through saw-tooth fronts, skylights, or monitor sash. Experience has shown that on account of of practical defects roof lighting is generally associated with certain drawbacks such as leakage, condensation drip, corrosion, glass breakage, etc. All of these are annoying, increase the cost of maintenance and interrupt production. Complete satisfaction has been considered almost unattainable, and in consequence many architects have abandoned the use of skylights altogether. Durability and cost of maintenance have been sacrificed in order to exploit constructions having but one or two alleged good features, or to produce something which could be sold at a low price. By applying the same scientific principles and thorough methods which have placed other asbestos protected metal products in a class by themselves, we have arrived at what may be safely accepted as practically a perfect solution of roof-lighting problems. Asbestos protected metal glazed structures are invariably safe against deflection, positively water-excluding and corrosion-proof under all conditions of service. In them cost of maintenance has been practically eliminated—and this has been accomplished without increasing the first cost."

WOLVERINE *for* MARINE SERVICE

THE MOTOR WITH THE BORE *and* STROKE

FUELS { KEROSENE (PARAFFIN)
GASOLINE (PETROL)
DISTILLATE
SUCTION PRODUCER GAS

Write for Catalogue No. 73



WOLVERINE MOTOR WORKS BRIDGEPORT CONN U.S.A.
formerly GRAND RAPIDS, MICH.

The New Quadruple-Screw Steamship "Lafayette" of the French Line

Equipped with Welin Quadrant Davits and Lundin Decked Life Boats

This equipment covers the requirements in accordance with the provisions of the International Conference on Safety of Life at Sea.

It provides life boat capacity for all on board, and insures the greatest efficiency and security in time of need.

WELIN MARINE EQUIPMENT CO.

305 Vernon Ave.,
Long Island City, N. Y.

London House { 5 Lloyds Ave.,
London, E. C.

The arc welding outfit made by the General Electric Co., Schenectady, N. Y., is described in circulars just published. According to these circulars, quick and serviceable repairs on all kinds of machines are now made cheaply by arc welding. The General Electric Company makes a portable arc welding outfit consisting principally of a motor generator and panel mounted on a four-wheel truck. Larger sized, non-portable sets are also furnished, capable of operating one or more electrodes.

Three valuable books for engineers. The Wheeler Condenser & Engineering Co., Carteret, N. J., has just published three books for engineers and, describing them, writes MARINE ENGINEERING as follows: "We are handing you herewith three of our books, (1) Steam Tables for Condenser Work, third edition, with which you may already be acquainted; (2) our Psychrometric Tables for Cooling Tower Work, just published, and (3) a combined cloth-bound volume of the two foregoing, also just published. We have thought of putting a price upon these books, but have finally decided that the paper-bound copies will be distributed free to all engineers who request them. The cloth-bound edition is not for general distribution, and a copy is sent you for your own use, and should not be mentioned as available for distribution, because we are unable to send these out indiscriminately. A brief review of the Psychrometric Tables will be found in the enclosed leaflet."

Cost of building tanks cut from one-half to two-thirds by electric welding. This is a statement made in Bulletin B, issued by the C & C Electric & Manufacturing Co., Garwood, N. J. "The costly, slow process of building tanks by punching holes and riveting is now being replaced by electric arc welding, and the job is done in minutes in place of hours Calking is unnecessary and the joints are stronger and tighter. C & C electric arc welded seams are continuous, homogeneous throughout, and of equal strength to the material of the tank itself. The reliability of electric arc welded joints is recognized in its practically universal adoption for locomotive boiler repair and high-pressure container work. Electric arc welding with a C & C welder is also the most economical, quickest and most reliable method of welding for boiler and tank building and repair. We can furnish itemized figures on a large number of jobs, and comparative costs for doing work by electric arc welding and other methods of welding."

"Perfection" rivets for boiler makers, everyone of which is made of specially tested basic open-hearth steel, are described in a circular issued by Anthony Carlin, the manufacturer of these rivets, Cleveland, Ohio.

A gang punching machine with twenty punches is described in catalogue 0-1095, just published by Bertsch & Co., Cambridge City, Ind. Each punch in this machine is gagged so that it may be either engaged or disengaged independently of all the other punches. Bertsch & Company have had thirty-three years' experience designing and building punching and shearing machinery and bending and straightening rolls.

You can increase your output and decrease your costs, according to a circular published by H. Collier Smith, 817 Scotten avenue, Detroit, Mich., by the use of "Quickwork" rotary shears, which cut the most irregular, serpentine or zigzagged lines in sheet metal up to half an inch thick. This machine leaves the metal perfectly flat and true as if blanked out with dies, no kinks or burrs and no cutting in from the side of the sheet

The Babbitt adjustable sprocket rim is described in a circular published by the Babbitt Steam Specialty Co., New Bedford, Mass. "It has long been a great inconvenience, both as to time required and also as to the expense incurred, when you found yourself in need of a chain wheel to operate a valve in an inaccessible place. We have at last solved this problem by supplying a sprocket rim which is adjustable to the rim of the wheel of any valve. No delay, no trouble, small expense. No delay, because your supply dealer can carry in stock an assortment to cover your requirements immediately. No trouble, simply setting up of three nuts. Small expense, about one quarter the price you have previously paid. The necessity of bringing a ladder to the location of the valve which you desire to open or close is, at least, a cause of inconvenience, and may cause loss of valuable time, to say nothing of the danger of a fall. Heretofore, in order to overcome this difficulty, special sprocket wheels have been made for each particular valve and have had to be machined and fitted to the valve stem, causing a long delay and a very large expense, especially in the case of a rising stem, whereas our rim will fit any valve and will not interfere in any way with the rising stem. To attach, adjust the hook bolts to rim of wheel, having the bolt pass through the slot in lugs, center the sprocket rim on wheel and set up on nuts."

In Mr. Webster's Book

the word INDESTRUCTIBLE

is defined thusly

INDESTRUCTIBLE - NOT DESTRUCTIBLE
INCAPABLE OF DECOMPOSITION OR OF BEING DESTROYED

"INDESTRUCTIBLE"
WHITE SHEET PACKING

STYLE NO.10

HAD BROTHER NOAH KNOWN ABOUT
INDESTRUCTIBLE PACKING
HE WOULD HAVE MADE THE DEFINITION STRONGER!
and he would have been right
FOR INDESTRUCTIBLE PACKING IS WONDERFULLY MADE
GUARANTEED TO STAND HIGH AND LOW PRESSURE STEAM, HOT
AND COLD WATER OIL, GREASE, AMMONIA AND ACIDS OF ALL KINDS.

INDESTRUCTIBLE *is the King of all* PACKINGS
WRITE - WIRE OR PHONE FOR SAMPLES, PRICES AND FURTHER
INFORMATION AND COPY OF OUR ENGINEERS CATALOGUE SHOWING
PACKINGS FOR ALL CONDITION OF SERVICE

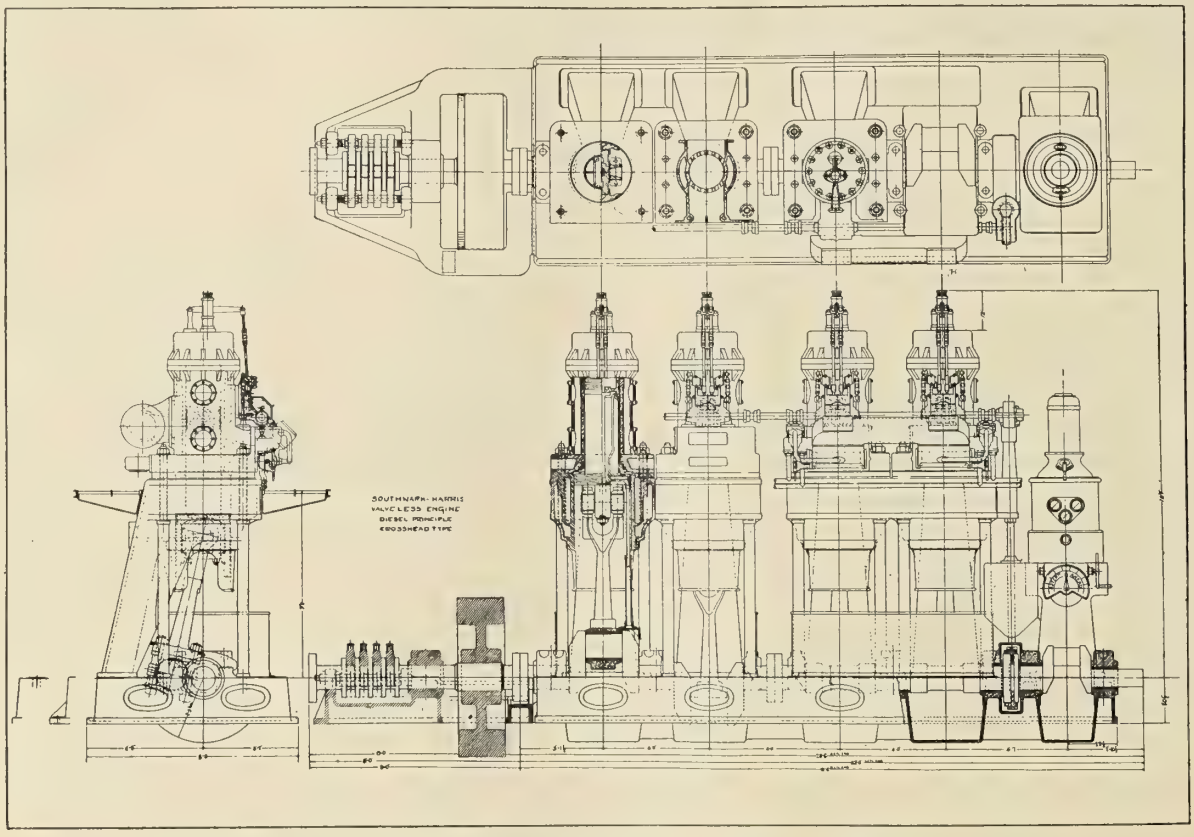
NEW YORK BELTING AND PACKING COMPANY

NEW YORK, N.Y. *91-93 Chambers St.*
CHICAGO, ILL. *124-126 W. Lake St.*
PHILADELPHIA, PA. *821-823 Arch St.*
PITTSBURGH, PA. *420 First Ave.*
BOSTON, MASS. *232 Summer St.*
SAN FRANCISCO, CAL. *519 Mission St.*
SPOKANE, WASH. *157 So. Monroe St.*
ST. LOUIS, MO. *218-220 Chesnut St.*

From Stone Cold to Full Power in 10 Seconds

The SOUTHWARK-HARRIS VALVELESS ENGINE

DIESEL PRINCIPLE



Crosshead Type 450 I.H.P. to 2000 I.H.P.

Fuel Cost from 1/5 to 1/2 that of Steam

TWO CYCLE
STEP PISTON
DIRECTLY REVERSIBLE
LOW PRESSURE AIR STARTING
SINGLE WHEEL CONTROL

NO STANDBY LOSSES

SIMPLE
ACCESSIBLE
DEPENDABLE
DURABLE
QUIET RUNNING

THE IDEAL POWER FOR CARGO VESSELS

Designs also for Yachts, Submarines, etc.

SOUTHWARK FOUNDRY & MACHINE COMPANY

400 Washington Ave., Philadelphia, Pa., U. S. A.

Old Colony Bldg.
Chicago

Brown Marx Bldg.
Birmingham

Write for copy of Bulletin 3 I M.

Non-return safety boiler stop valves are described in an illustrated booklet just issued by the Lunkenheimer Co., Cincinnati, Ohio. "The great importance of non-return boiler stop valves for use on a battery of boilers is universally acknowledged, and in some countries their installation is compulsory. It is evident that should a tube be blown out or a fitting ruptured in one of the boilers of a battery, the steam from the other boilers would rush into the header and discharge into the disabled one. An ordinary stop valve would here be inadequate, as considerable time would necessarily be consumed in reaching and closing the valve, and a certain amount of danger must be anticipated. Where Lunkenheimer non-return safety boiler stop valves are used this contingency cannot possibly arise, because a slight reduction of pressure in the damaged boiler will cause the valve to act instantly and isolate it from the others in the battery, preventing damage and possible injury or loss of life. A Lunkenheimer non-return safety boiler stop valve will prevent steam from being turned into a boiler which has been cut out for cleaning or repairs, as it cannot be opened by hand when pressure is on the header side. It can, however, be closed when desired. The valve can be connected in either a horizontal or vertical position."

The Ingersoll-Rand Company, 11 Broadway, New York, N. Y., has issued two new booklets, Forms 76 and 9201. Form 76 is an 80-page catalogue, subject "Water Lifted by Compressed Air." It is a very complete treatise on the Air Lift and explains in thorough detail the air lift system of pumping. To all those in any way interested in adequate water supply a copy of this booklet will be found invaluable, since it very intelligibly presents all the facts essential in analyzing a proposition involving the use of clean water in quantity. Form 9201 is a 128-page 6 x 9 catalogue on Calyx core drills. The principle function of the core drill is the determination of the character, order, thickness and extent of the materials beneath the earth's surface, by means of cylindrical cores which it extracts. In coal and metal mines, stone quarries, contract work or for canal or tunnel developments projected, the core drill is used and takes what is otherwise an unknown quantity and converts it into an absolute certainty. By determining the actual conditions in advance, it is a medium to save thousands of dollars in machine equipment, underground workings, etc., that might otherwise be expended only to find a barren property. Booklet is illustrated, gives size and capacities of the different types and shows the apparatus in operation in the various fields.

The Stow flexible grinder is the subject of a circular just issued by the Stow Manufacturing Co., Binghamton, N. Y., and is described as follows: "The Stow flexible grinder, adjustable, is designed and built especially for the steel industry and allied trades. The motor shaft combination is mounted on a truck, making it easily transported to any part of the shop, eliminating the necessity of taking the work to the tool, thus saving time and cutting cost. The motor is ruggedly built, being totally enclosed with the starting equipment incorporated within the motor frame, thus giving a compact construction. The best of material and workmanship is used in the construction of this equipment and all the material used therein as well as the completed parts are thoroughly tested in ours laboratory. In our D. C. equipment the variation in speed is secured by means of a plunger in the pole piece, which operates to change the reluctance of the magnetic circuit. No power is lost in this operation, as is the case in most variable speed motors, and the full load efficiency remains practically the same at all speeds. This speed variation allows for the consuming of worn emery wheels down to the minimum, insuring proper cutting speed regardless of size and giving the highest efficiency. Another important characteristic of the Stow multi-speed motor is its ability to stand sudden overloads, which it does without dangerous sparking. The motor is so balanced on the truck that it may be adjusted to the proper angle for all purposes and to meet all grinding conditions. The weight of the flexible shaft is taken off the operator. The motor shaft combination may be had for any current and adds to the already large list of Stow tools, which are tools of proven value. A portable grinder which meets not only ordinary grinding conditions but is adaptable to unusual conditions. It may be used on small castings as well as large and enables the operator to work over a large area. The emery wheel on the driven end of the shaft may be interchanged with a scratch brush should the work demand. The Stow flexible grinder, adjustable, is also furnished for A. C. current, but motor does not regulate any cycle or phase. The tool is built in several sizes, according to the capacity of the emery wheels desired. It has been designed to give the maximum grinding efficiency in all cases. We are glad to furnish at all times further details upon request. Any operating official cannot afford to overlook the merits of the Stow flexible grinder, adjustable."

BERNSTEIN METAL BERTHS

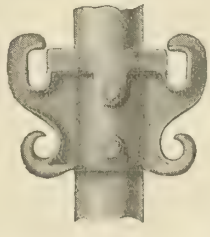
Bernstein No. 5550 Folding Berth, installed on U.S.S. "Newark," Providence Harbor.

"STANDEE BERTHS ONE OF OUR SPECIALTIES." We have built them in quantities for the largest shipbuilders in the U. S.

Manufactured in their entirety in a plant which is one of the oldest, largest and best equipped metallic bed and bedding factories in the country.

A complete, practical and efficient line is offered. "A berth to successfully meet every condition on board ship." Also brass and iron beds, mattresses and pillows.

We describe them fully in a catalog which should be on your files. WRITE FOR IT — SPECIFYING CATALOG NO. 17.



One of the distinctive features on our No. 5550 Folding Berth. The berth cannot work out of the supporting socket.

BERNSTEIN MFG. COMPANY, Dept. C., 3rd & Allegheny Ave., PHILADELPHIA, PA.

Monel Metal is the title of a handsomely printed catalogue published by the Bayonne Castings Co., Bayonne, N. J. Monel metal is described as being a metal having the strength of steel with a high non-corrodibility that has been the long-felt want in engineering and mechanical fields. According to the manufacturer, this place has been filled by Monel metal in a way that has exceeded all expectations. In manufactured forms, Monel metal comes in great variety. A few of these are as follows: Tubes, rivets, valve seats, discs, steams, marine condensers; bolts, and nuts, pump liners, pump rods, propellers (large and small from battleships to small launches), propeller shafts, and boat trim such as deck fittings, stern bushings, rudders, struts, stuffing boxes, shaft sleeves, etc., refrigerating machinery and refrigerators, valves for combustion engines, etc.

BUSINESS NOTES

STEAMERS RECENTLY FITTED with the Ross Schofield system of circulation, made by the Ross Schofield Company, 17 Battery Place, New York:

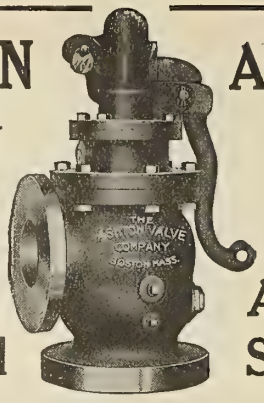
Steamships	Line	Number of Furnaces
Massachusetts	Atlantic Transport	18
Maryland	" "	12
Missouri	" "	12
Maine	" "	9
Samarinda	Rotterdamasche Lloyd	18
New steamer	Harland & Wolff	64
New steamer	" "	96
New steamer	" "	36
Cameronia	Anchor Line	45
California	" "	36
Magnetic	White Star	6
Afric	" "	12
Daishin Maru	Yonei Shoten	3
Kawasaki Dockyard	" "	36
Steamer	" "	6
Frank Parish	Arthur Holland & Co.	8
Lomas	" "	6
Neuquen	" "	9
Tandil	" "	8
Azul	" "	6
Purelight	American Petroleum Co.	9
New York	" "	12
Cardiff	Fisher & Co.	3
Margarite	Thames Steam Tug Co.	2
Constance	" " "	1
Maud	" " "	2
Lettie	" " "	2
Sunshine	W. H. J. Alexander	2
Sunclad	" "	2
Sunlit	" "	2
Sunbeam	" "	2
Sunfly	" "	2
Sunrise	" "	2
Sunbird	" "	2
Sunfish	" "	2
Sun I	" "	2
Sun II	" "	2
Sun III	" "	2
Sun IV	" "	2
Sun V	" "	2
Sun VI	" "	2
Clive	" "	1

RECENT ORDERS for oil engines received by Bolinders Company, 30 Church street, New York, are as follows: Bark *Carmela,* Mobile, two twin 160 brake-horsepower, two-cylinder marine oil engines, Model "M I"; Smith Shipping Company, Inc., six 320 brake-horsepower, four-cylinder marine oil engines, Model "M II"; sugar transport boat *Cuba,* one 65 brake-horsepower, two cylinder marine oil engine, Model "E I"; J. B. King Company, for barges now lying at Staten Island Ship Building Company, two 160 brake-horsepower, two-cylinder marine oil engines, Model "E I"; schooner *Alembic,* W. & S

ASHTON ASHTON

Pop Safety Valves — Steam Gages

The Quality Standard — The Accuracy Standard



No. 16 Style Marine Valve

THE ASHTON VALVE CO., BOSTON, U. S. A.

New York — St. John's House, London, Eng. — Chicago

ROSS SCHOFIELD BOILER CIRCULATORS

OVER 3,000,000 HORSE-POWER INSTALLED OR ON ORDER

ROSS SCHOFIELD COMPANY

17 BATTERY PLACE — NEW YORK CITY

CEDERVALL'S PATENT

Protective and Lubricating Boxes

FOR PROPELLER SHAFTS

Are fitted to more than 3,000 Steamers, with shafts ranging between 1½ in. and 20⅝ in. in diameter.

Our system insures maximum safety of propeller shafts, as these are running in oil, consequently no corrosion. . . . . The costly liners on shafts may therefore be dispensed with as being absolutely superfluous. . . . . .

FRICTION MINIMISED

Consequently

—POWER SAVED.—

Old Stern Tube Arrangements can be altered for application of this Lubricating Box at a very Nominal Cost. . .

MAKERS:

F. R. CEDERVALL & SÖNER,

GOTHENBURG, SWEDEN.

AGENTS—*England, East Coast:* Jos. JOHNSON, Newcastle-on-Tyne. *England, West Coast:* MAXTON & SINCLAIR, Liverpool. *Scotland and Ireland:* JOHN G. KINCAID & Co., Ltd., Greenock. *Norway:* I. von der LIPPE, Christiania; C. DAHM, Bergen; OLAF BERG, Stavanger. *Netherlands and its Colonies:* N. V. SOERABAYASCHE MACHINENHANDEL, v/h Becker & Co., The Hague. *Italy:* DOTT. ATTILIO PANZANO, Genova. *U.S.A., West Coast:* LOUIS WILHELMSON, United Engineering Works, San Francisco, Alameda and Oakland.

REG'D TRADE MARK

HOLZAPFELS

COMPOSITIONS FOR IRON AND STEEL VESSELS' BOTTOMS

In use and in stock at all ports of the world. Over 18,000,000 gross tons of shipping coated annually

Proprietors of INTERNATIONAL COMPOSITION, ANTICORROSIVE, and ANTIFOULING

HOLZAPFELS AMERICAN COMPOSITIONS CO., Offices, Welles Bldg., 18 Broadway, N. Y.

HOLZAPFELS, LTD., Milburn House, Newcastle-on-Tyne, England.

Job & Company owners, two twin 50 brake-horsepower, two-cylinder marine oil engines, Model "E I"; Manufacturers & Merchants' Lighterage Company, one 320 brake-horsepower, four-cylinder marine oil engine, Model "E II"; schooner *Chiriqui,* Enrique Halpen owner, one 80 brake-horspower, two-cylinder marine oil engine, Model "E I"; Alexander & Baldwin, for Hawaiian Islands, one 240 brake-horsepower, four-cylinder marine oil engine, Model "M II"; The Texas Company, for auxiliary trader, two twin 320 brake-horsepower, four-cylinder marine oil engines, Model "M II." In addition to which there are the twelve 500/600 brake-horsepower, four-cylinder marine oil engines, Model "M II," on order for the oil tankers now building at the Baltimore Dry Docks & Ship Building Company, for Motor Tank, Ltd., of Christiania, Norway.

NEW 3,000-HORSEPOWER MOTOR SHIP.—An order has just been placed with the Werkspoor Company, Amsterdam, by a Norwegian shipowning firm for a 6,500-ton D. W. C. cargo motor-driven ship, making the twenty-fifth Diesel ship built, or on order, with this concern. This vessel will be equipped with two Werkspoor-Diesel engines of the direct-reversible, single-acting, four-cycle type, developing about 1,500 indicated horsepower apiece, at 120 revolutions per minute. The interesting part of this order is that these engines will be a distinct advance upon previous Werkspoor motors, because hitherto all engines over 1,000 horsepower have been in six cylinders, whereas in the present instance the number of cylinders will be reduced to four, each having a bore of 24¾ inches by 47¼ inches stroke, thus reducing the number of parts by about 20 percent. In their marine steam engineering department the Werkspoor Works are also extremely busy, having fifteen sets of 1,000 to 6,000 indicated horsepower each for commercial craft alone, apart from a great amount of marine turbine work, of which one set alone is of 65,000 horsepower. Many shipowners and others will remember with pleasure that genial engineer from the Werkspoor Diesel Works, Amsterdam, Mr. Girard Lugt, who was over here last summer, but will be sorry to learn that he recently had a narrow escape from losing his life. In the last Zeppelin raid on London, where Mr. Lugt happened to be on business, a couple of bombs dropped some 20 feet away from him, but, fortunately, he was unhurt.

ORDERS for Eckliff automatic boiler circulators. The Eckliff Automatic Boiler Circulator Company, 46 Shelby street, Detroit, Mich., has received orders from the New York Shipbuilding Company, Camden, N. J., covering the installation of 24 Eckliff circulators in ships the New York Shipbuilding Company is building for the Coastwise Transportation Company, and 8 circulators in ships for the Pocahontas Navigation Company.

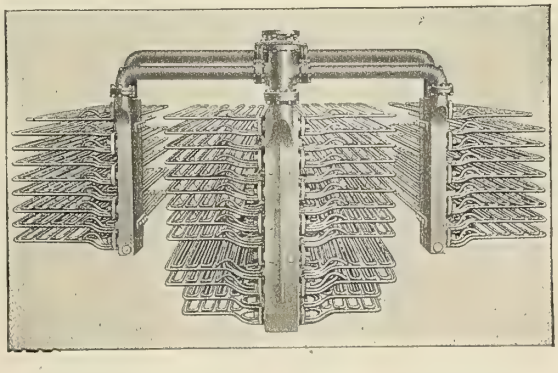
THE C. M. LANE LIFE BOAT COMPANY, 246 Huron street, Brooklyn, N. Y., reports great activity in the line of power and pontoon lifeboats, employing more than forty boat builders. While the Seamen's Act does not seem to affect the coastwise ships, so far as lifeboats are concerned, as they are well fitted with lifeboats for all on board, there are still lifeboats to be supplied to the trans-ocean liners when running with full passenger capacity. The Lane Company states that "the present type of metallic lifeboat, as prescribed by the Board of Supervising Inspectors, seems to be the one preferred, on account of the service it gives. In addition to the regular open boats the trans-ocean liners carry a large number of the Englehardt type of collapsible lifeboats, which are now rated as 2C pontoon lifeboats, according to the latest rules of the Board of Supervising Inspectors. The only change in their construction is that a patent device is attached to the sides of the boat, affording means of quickly clearing the decks of water. These orifices were invented by Captain Engelhardt, and are such that the water cannot enter the boat through them when they are intermittingly submerged. The boat will clear 2 tons of water in less than 20 seconds, about one-half of the water running out the first 5 seconds and two-thirds in 10 seconds. The C. M. Lane Life Boat Company is also building this type of lifeboats at Sorel, Canada, under the supervision and approval of the Canadian Department of Marine."

A NEW OIL ENGINE has been placed on the market by the Burnoil Engine Company, 1120 High street, South Bend, Ind. The manufacturer sends us the following description of this engine: "All recognize the fact that steam engines, while now the standard of power, have a low thermal efficiency; in other words, are extremely costly to install and operate. Students of the power problem are looking for relief and many look to the internal-combustion engines to improve the situation.

FIRE TUBE MARINE SUPERHEATER

EIGHT REASONS WHY:

1. It is adaptable to either new or existing boilers of the fire tube type and can be applied with no change in design or construction.
2. It renders possible increase in output of boiler horse power from a given boiler plant, 10% to 20%.
3. It will produce the same power output with fewer boilers.
4. It reduces the size of the bunkers, thereby reducing the draft of the vessel with a given cargo or making possible an increase in revenue cargo.

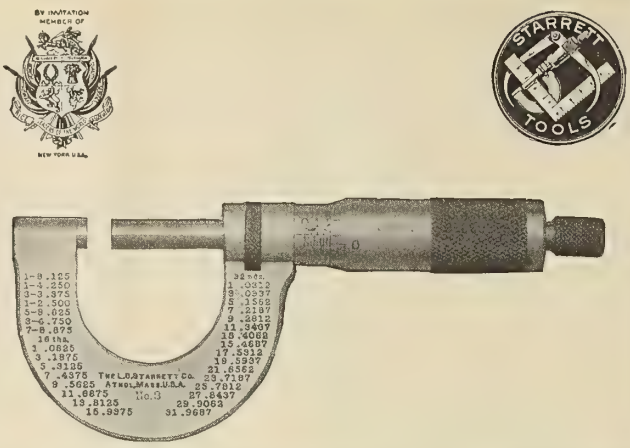


5. It results in a saving of fuel over saturated plants, both operating under the same draft conditions, of 10% to 20%.
6. It reduces the maintenance costs by the prevention of water hammer, leaky flanges and condensation in the cylinders.
7. It does not prevent rapid, thorough and frequent cleaning of the tubes.
8. Its construction provides easy access to all screwed joints and the easy removal of the parts.

LOCOMOTIVE SUPERHEATER CO.

30 Church St., New York, N.Y. **People's Gas Bldg., Chicago, Ill.**

While the modern gasoline engine has become a wonderful machine, it can hardly hope, with its expensive fuel, to project itself into a wider field than it now occupies. Owing to the great increase in the production of petroleum, and especially of those grades lean in gasoline but rich in fuel oils, people are expecting the internal-combustion oil engine to advance and occupy a larger field. The hot ball type of oil engine has patent defects that condemn it, yet brings a hint of the future. The Diesel engine comes with a larger promise, its principle of operation is a great step in advance, but its complicated method of applying this principle in a large measure defeats the victory gained, and a step nearer the ideal must be taken before the internal-combustion engine can come into its rightful position as a new and higher standard of power. In the Burnoil engine, as built by the Burnoil Engine Company, South Bend, Ind., there is evidence that this step has been taken, as few people realize how near this engine has come to fulfilling the requirements of an ideal engine. We can hardly conceive of an internal-combustion engine without a piston, connecting rod, crankshaft and governor device, and if it be a four-cycle engine it must have inlet and exhaust valves. Users of an internal-combustion engine do not want anything more complicated, but in the majority of engines there are many additional and complicated parts, particularly the carburetor and ignition system. In marked contrast the Burnoil engine has only one additional moving part, namely, a small poppet valve to open and let the oil flow in by gravity. The fuel oil is fed through a pipe to an inlet from the oil tank by gravity, and, of course, must be liquid enough to flow freely, thence the oil passes a valve (which is operated by a governor) to the seat of the valve. This opens during the suction stroke, admitting the required amount of oil to the fuel cup. During the compression stroke of the piston, pure air is taken into the cylinder and compressed. This compressed air attains a temperature of 1,000 degrees F. as it enters the fuel cup through two small holes. At the point of highest compression (when piston is nearest the cylinder head) the heat of the compressed air explodes a little vapor from this oil, and the force of this explosion sprays the remaining oil out through these small holes meeting air in the compression space at the head of the piston heated to 1,000 degrees F. by its compression, when it burns, expands and drives the piston on its power stroke. This additional moving part, the fuel valve, is adjusted in the factory, and needs no adjustment thereafter, so that the only adjustment to be made on these engines after they leave the factory are the adjustments common to any engine—that of governor to regulate the speed to that required for the work. Of course, these engines must be kept lubricated, furnished with water for cooling and oil for power, but it seems remarkable that when effort was made to improve the gasoline engine so that it would burn heavy oils, this improvement was accomplished by simplifying the gasoline engine rather than by adding new parts. This improvement in Burnoil engines is scientifically correct, as experiments show that heavy oils cannot be vaporized completely by heat. For this reason they cannot be used in the carburetor of the common gasoline engine, and when used in engines of the hot ball type, the oil is not completely vaporized by the hot ball or plate, and consequently the heavier parts are turned into troublesome carbon deposits. As in the Diesel engine so in the Burnoil engine, the oil is not vaporized but atomized or blown into a fine mist. In this way scientifically correct combustion is secured, the oxygen in the air is thoroughly mixed with all the minute particles of oil, mist and heat being present, there is instant ignition and complete combustion. This type of engine has been successfully manufactured in Europe for a decade. The inventor, Brons, began in Holland, and now the following firms manufacture engines under Brons patents: Brons (inventor), Appingedam, Holland; A/s Frichs, Aarhus, Denmark; Gasmotoren Fabrik Deutz, Cologne, Germany; The Prager Maschinebau A. G., Prague, Austria; Messrs. Samuel White & Company, Ltd., Cowes, England. The Burnoil Engine Company has purchased the exclusive right to build marine engines in this country under the American patents of the Brons type of engine, and also has a license to build stationary and portable engines, and has exhibited at a number of State fairs this year its line of horizontal farm engines. The simple way in which Burnoil engines burn heavy oils down to 28 degrees Baume without spark, carburetor, hot ball, or compressed air for injection, and, moreover, start on these oils even in the coldest weather without any preheating or gasoline, is a strong selling factor, but when the power-using public becomes acquainted with the fact that they are much cheaper to install and operate than steam, and that they are thoroughly reliable and dependable, their rapid introduction into all fields will be assured."



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MARINE REFRIGERATING PLANTS.—The Brunswick Refrigerating Company reports the following sales since those given in the December issue: To W. R. Grace & Company, two 4-ton compressors for each of their new steamers now being built by William Cramp & Sons Ship & Engine Building Company. Ocean Steamship Company, of Savannah, a 2-ton plant for the steamship *City of Savannah.* The order was received for equipping this steamer late Saturday afternoon after everybody had left. Orders for the necessary material were gotten out on Sunday morning; men were obtained to run the necessary apparatus, and the plant was shipped Sunday night. It was delivered in New York on Monday morning, and the plant was erected complete by Tuesday night. That is, in 72 hours from the time the order was given, the plant was operating. Through the Maryland Steel Company orders have been received for a 1-ton plant for the last Munson Steamship Company's vessel now building there, and for 4-ton plants for each of the Bull Insular steamers, and for 2-ton plants for each of the Standard Oil Company of New Jersey tankers. Through the Newport News Shipbuilding & Dry Dock Company orders have been received for a 1-ton plant for the Munson Steamship Company, and for two 2-ton compressors for the new Mallory Steamship Company's steamer, now building, to replace the steamship *Denver.* Through the Seattle Construction & Dry Dock Company we have received orders for two 4-ton compressors for each of the new freight steamers now building at Seattle for the New York & Cuba Mail Steamship Company. A new list of marine installations, containing the names of about 300 steamers equipped with Brunswick marine refrigerating and ice-making plants, is now obtainable by applying to the Brunswick Refrigerating Company, Marine Department, New Brunswick, N. J.

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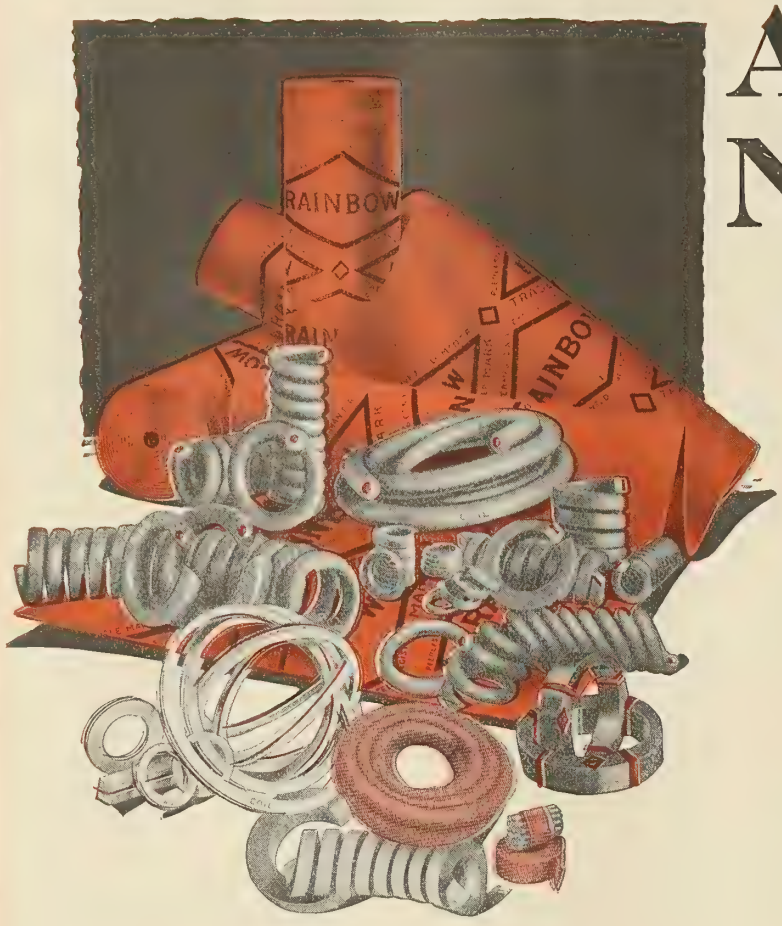
THE WEIMER CHAIN & IRON COMPANY, Lebanon, Pa., manufacturer of hand-made chains and hand-made forgings, has just completed a large order for chains for first-class and second-class buoys and bell buoys for the Cuban Government. We understand this concern has booked orders for a large tonnage of anchor chains, which, in connection with its regular trade for steam shovel, dredge, foundry, conveyor, quarry and other hand-made tested chains, will keep all departments busy.



A HAPPY NEW YEAR

AND MANY OF THEM

May 1916, for YOU and YOURS, be full of good things that make life a pleasure, and your allotment of health, of wealth and happiness be of full measure.

An old wish, 'tis true,
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We believe that the men who contributed to *our* season's success have reason to congratulate *themselves*. And we hope that *you* will soon get in touch with us and avail yourself of the sure savings which inevitably follow the installation of Eckliff Circulators.

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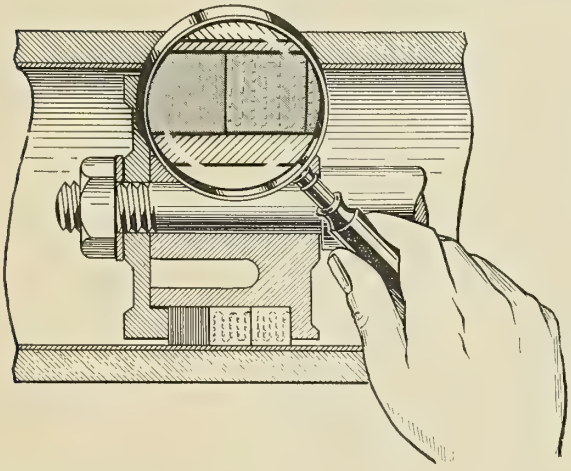
We'll leave it to you—which of these packings will stand side-swiping the better?



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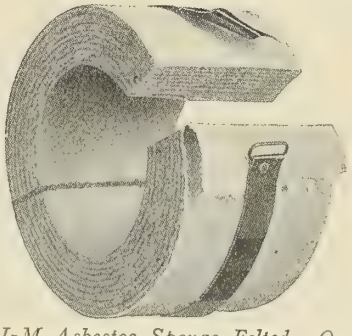

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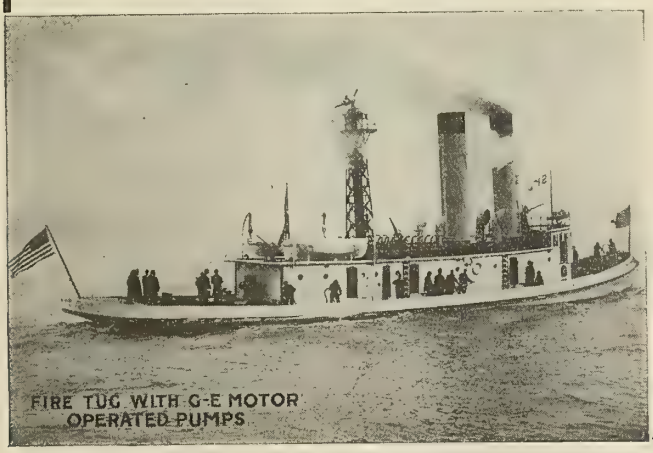
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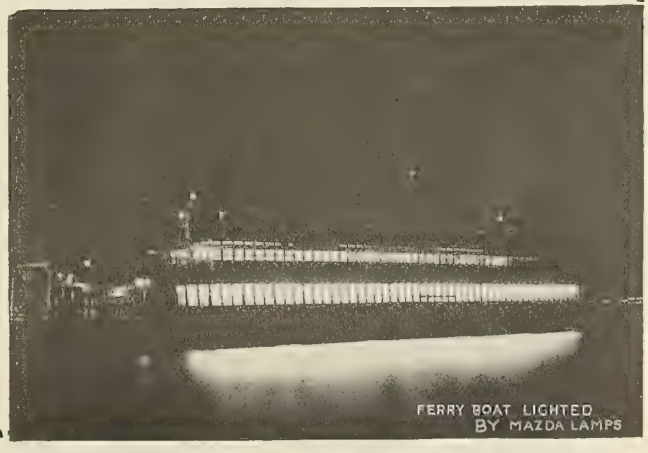
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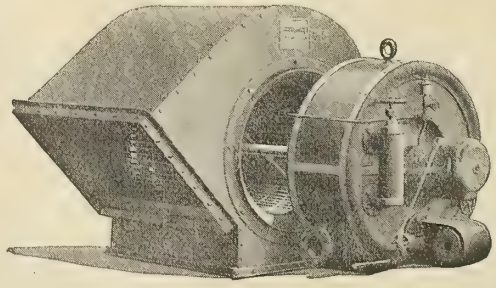

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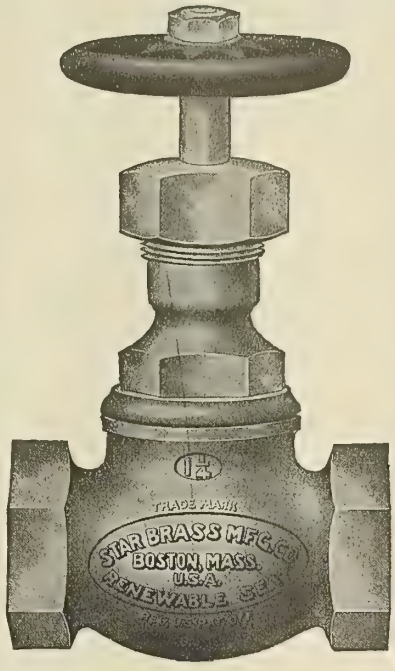

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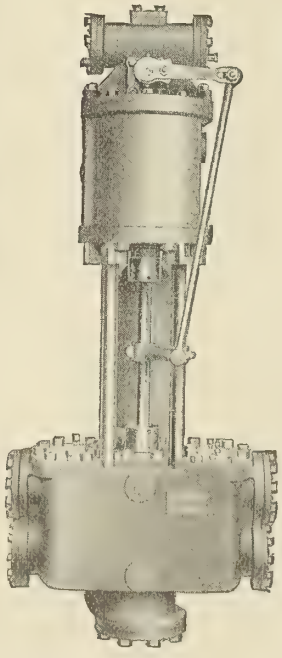

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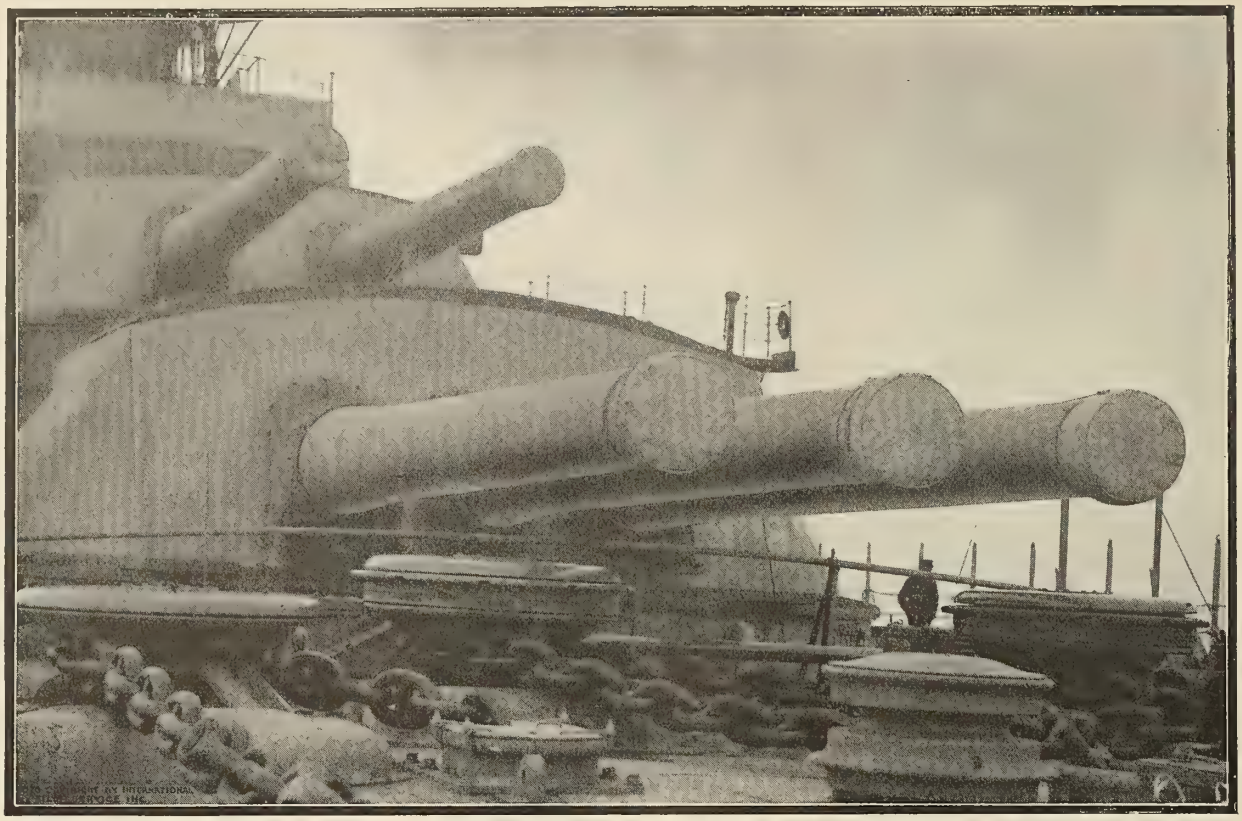

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The "NEVADA" is equipped also with

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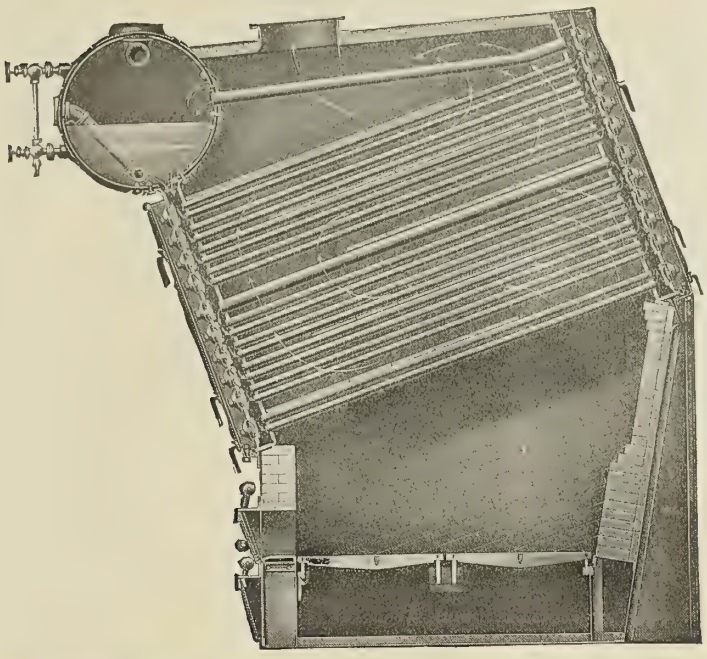

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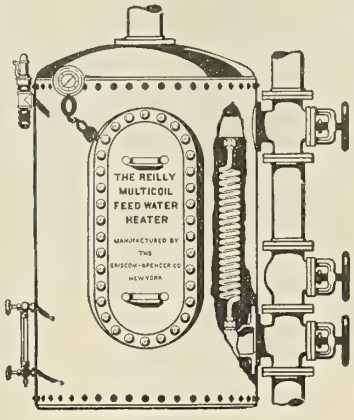

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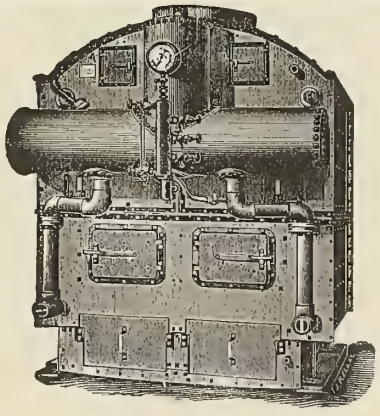

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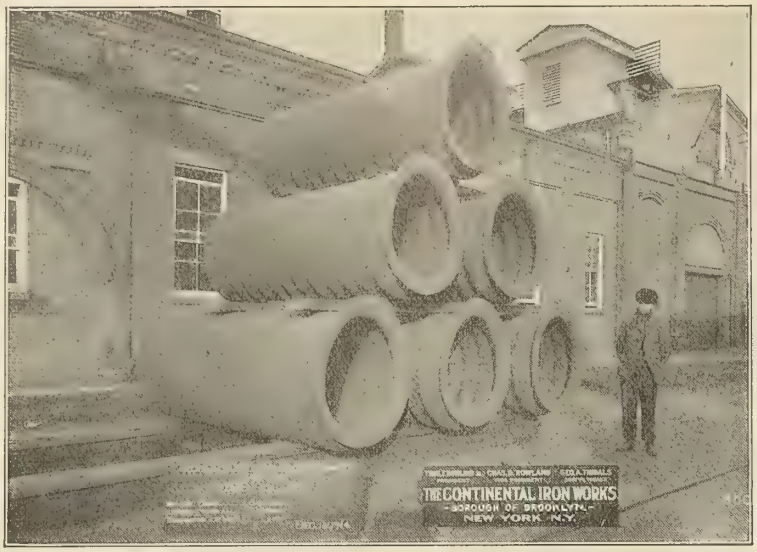

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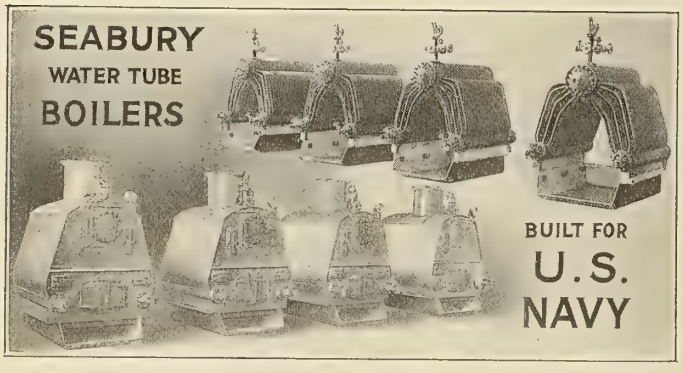

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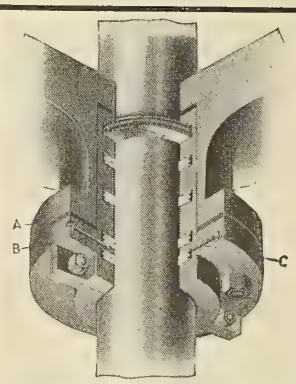

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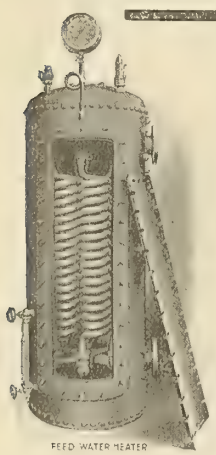

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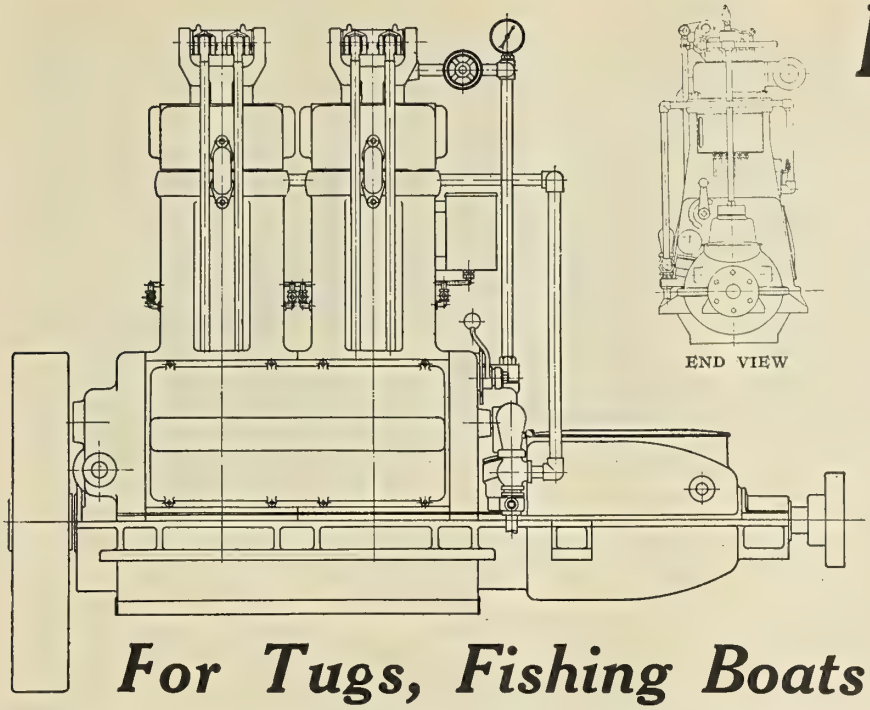

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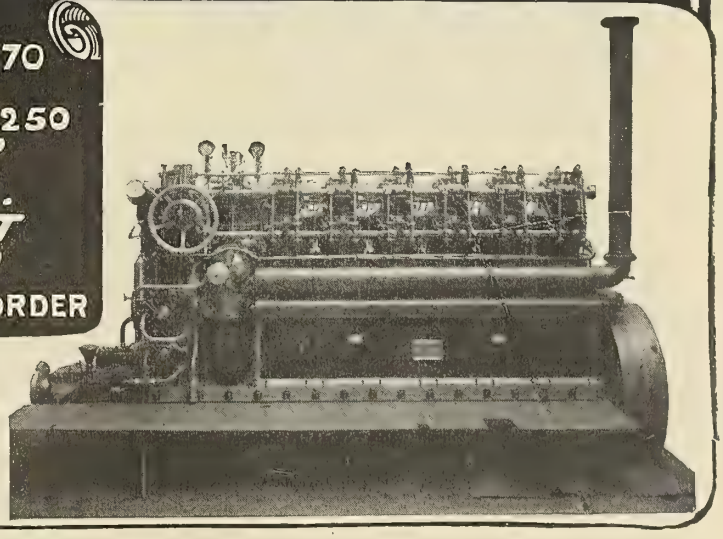

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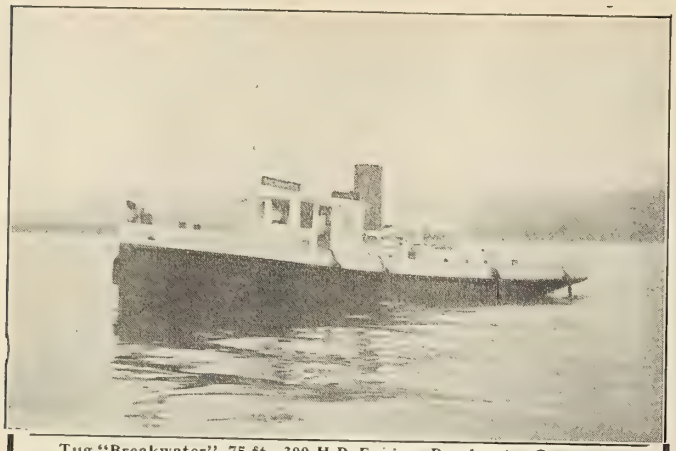

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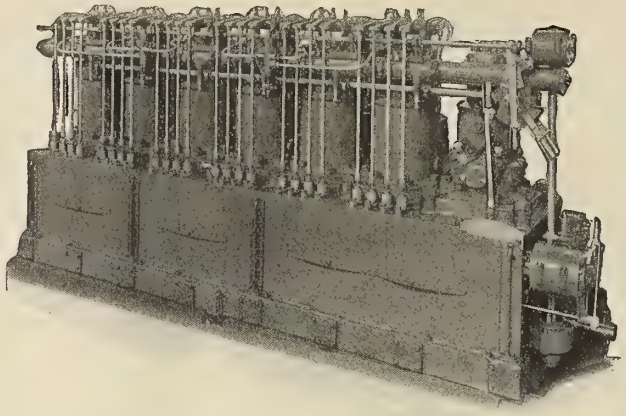

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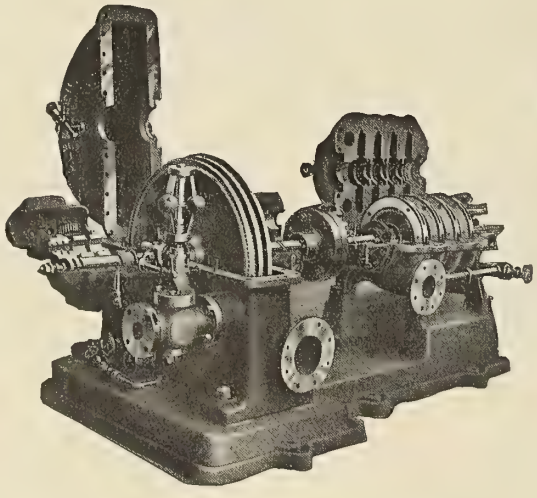

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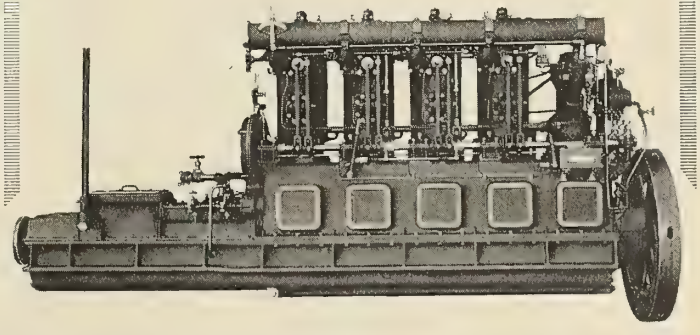

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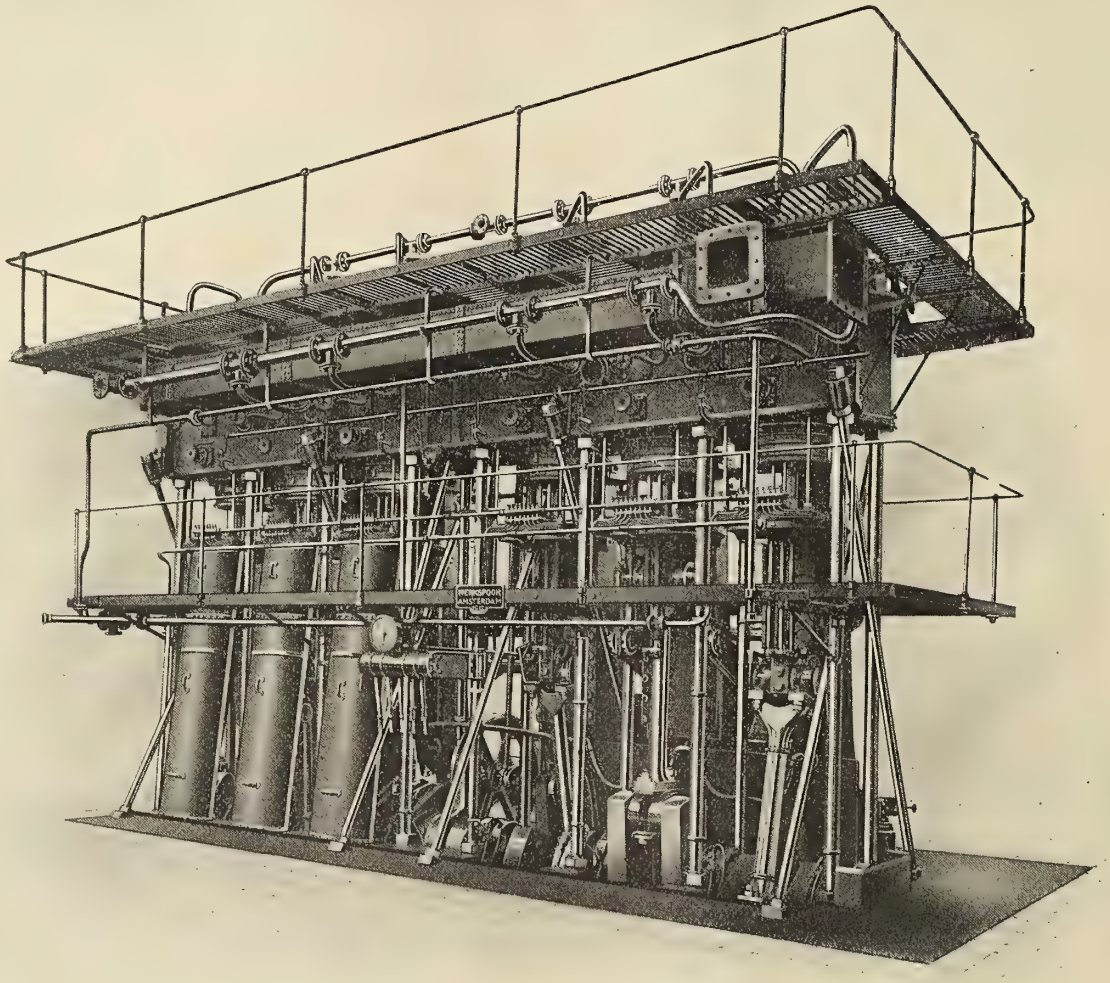

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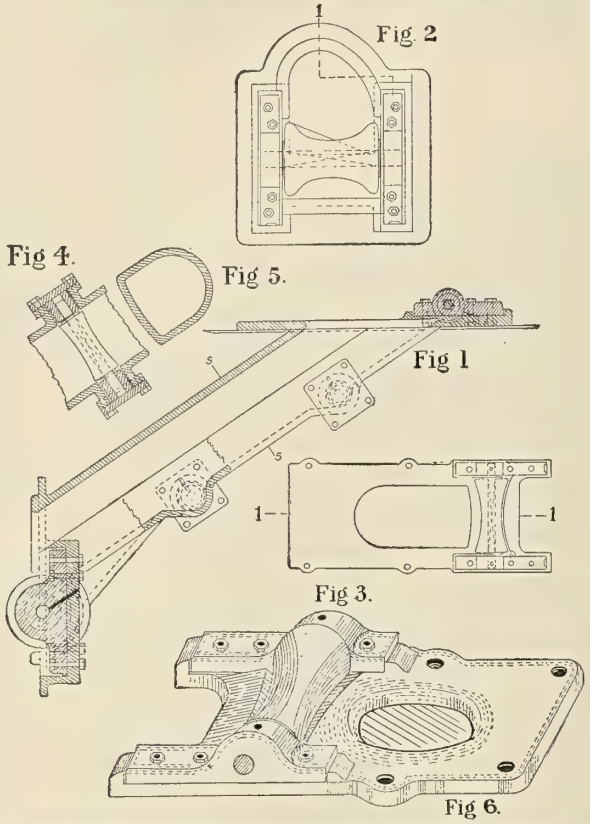

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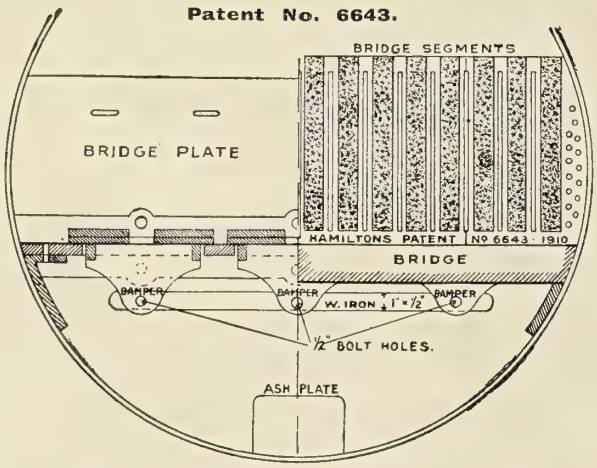

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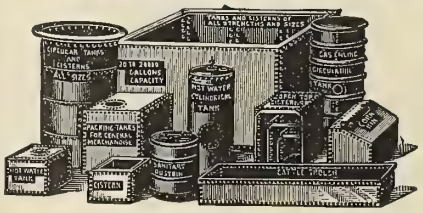

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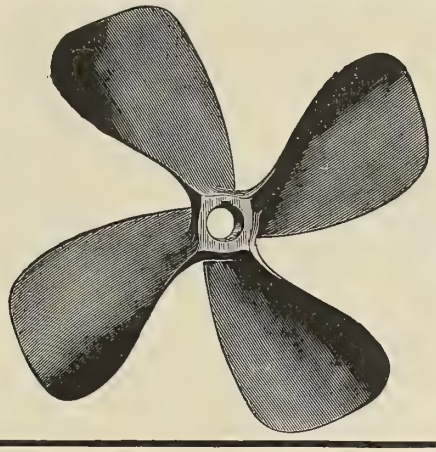

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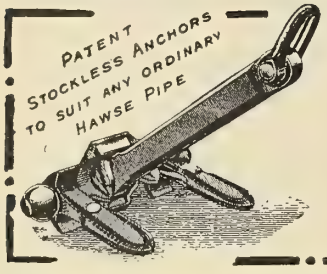

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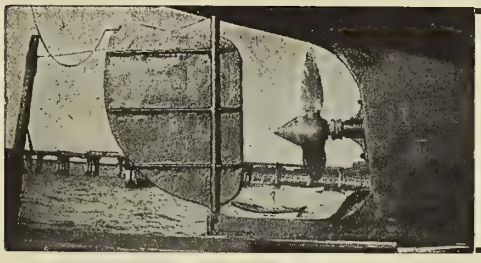

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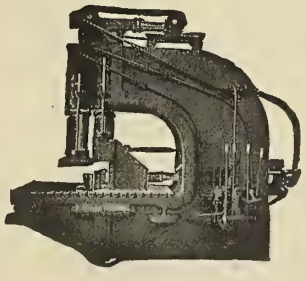

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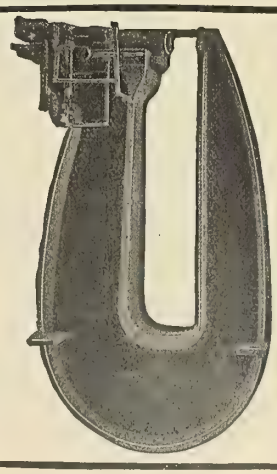

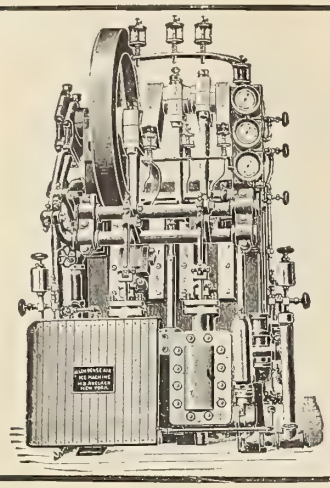

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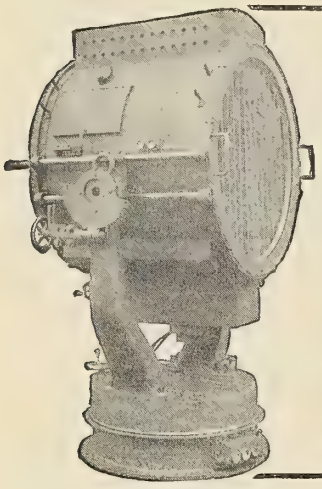

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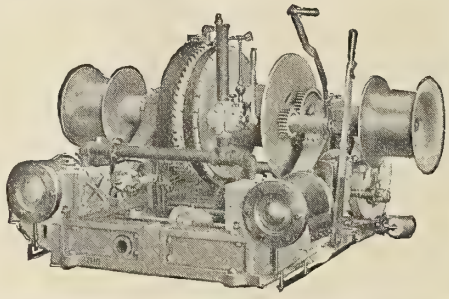

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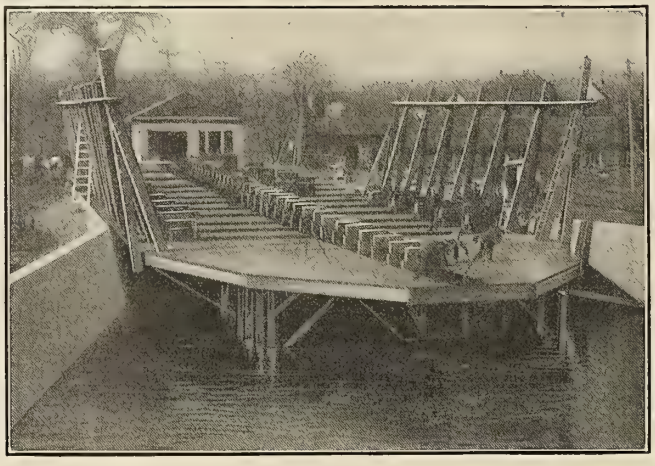

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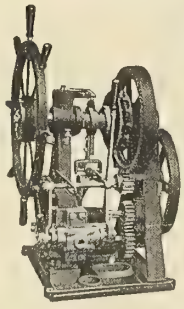

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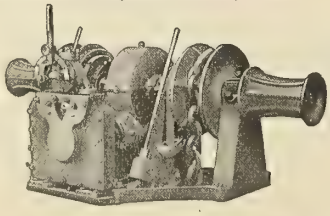

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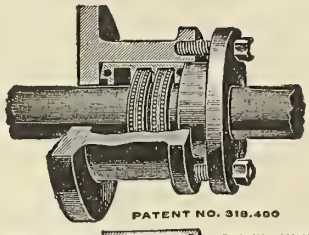

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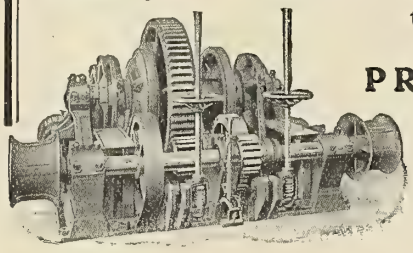

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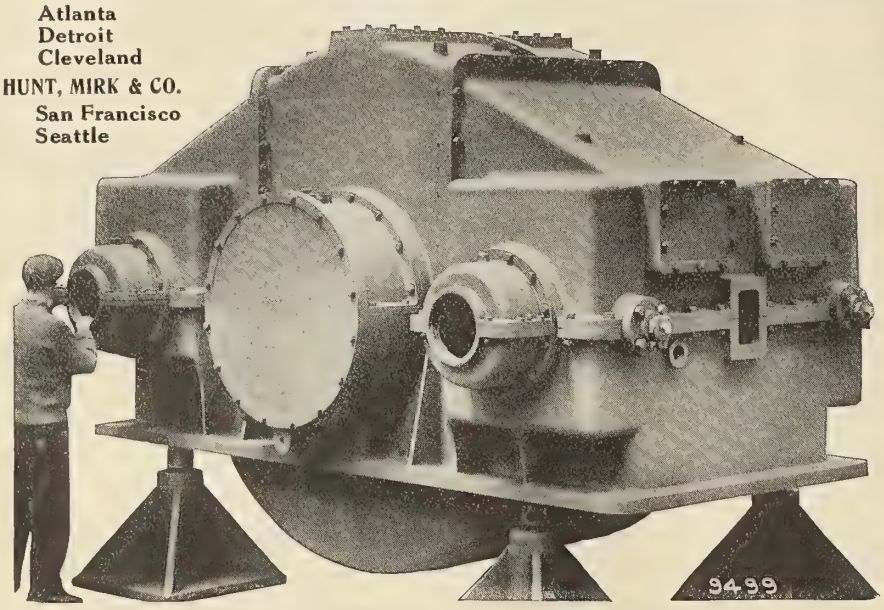

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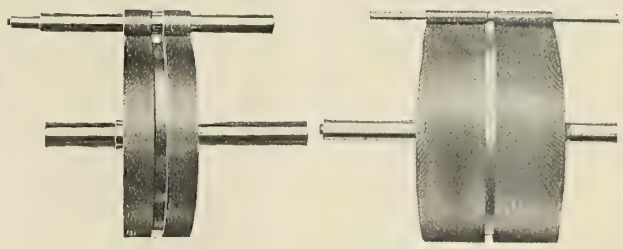

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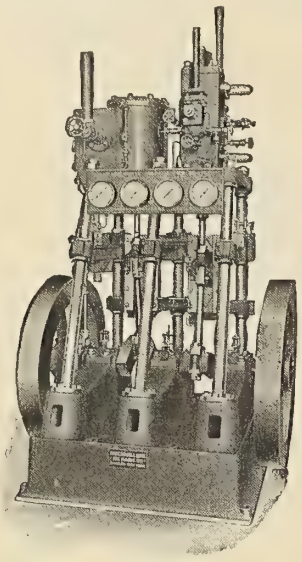

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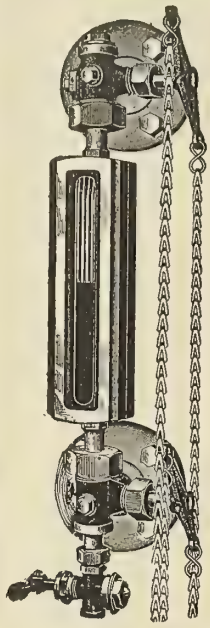

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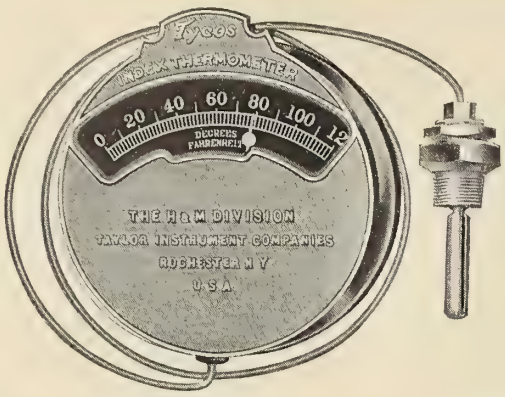

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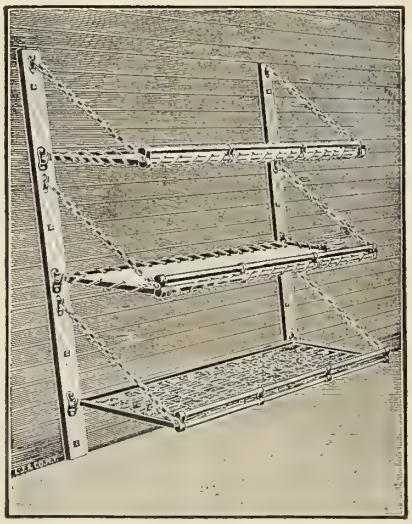

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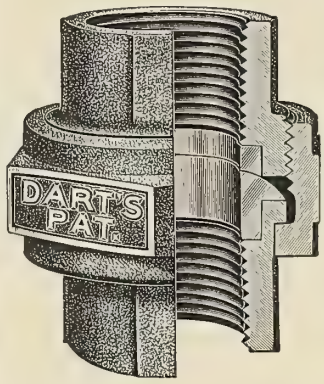

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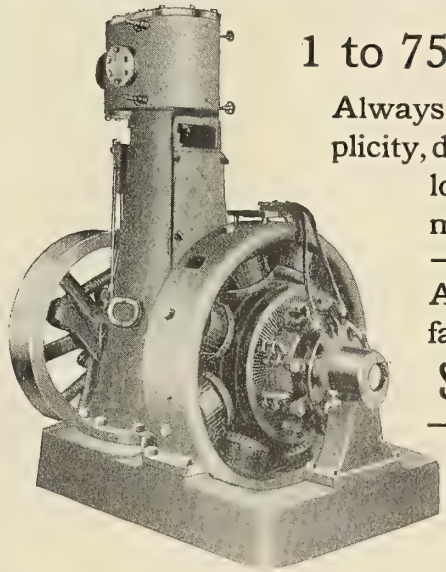

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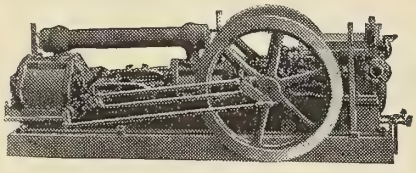

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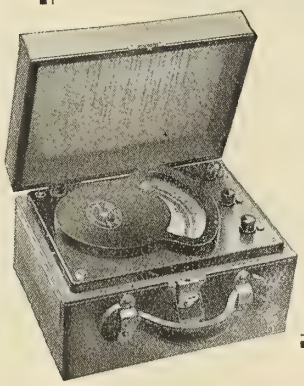

For complete information regarding Model 341 write for Bulletin No. 2004. Other Models in this group are Model 370 A.C. and D.C. Portable Ammeter described in Bulletin 2003; Model 310 Single-Phase and Direct Current Portable Wattmeter and Model 329 Portable Polyphase Wattmeter, both described in Bulletin No. 2002.

Weston Portable Instrument Transformers are described in Bulletin No. 2001.

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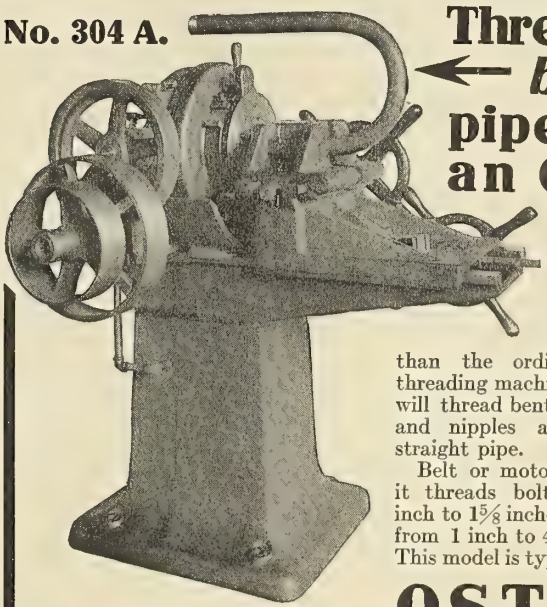

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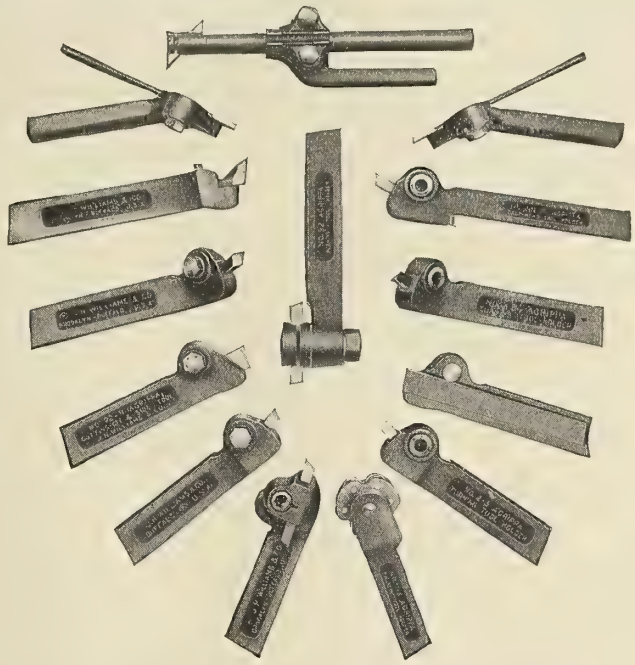

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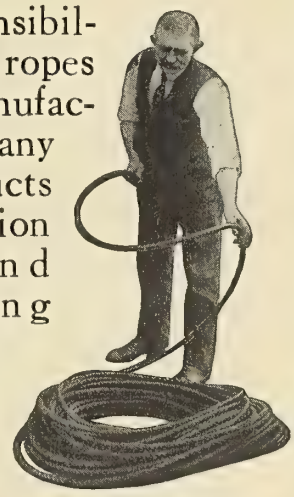

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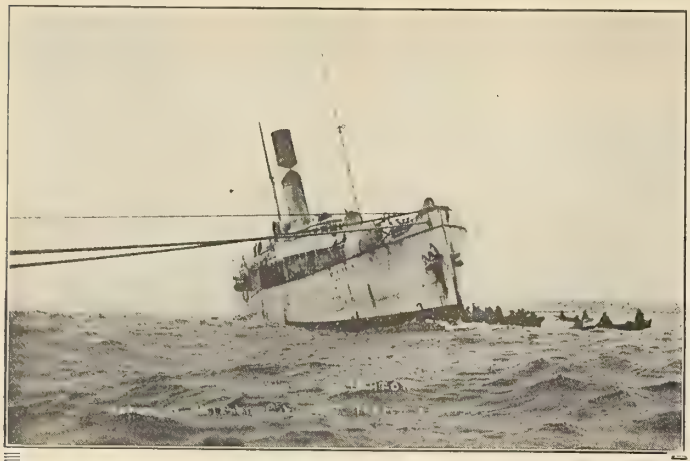

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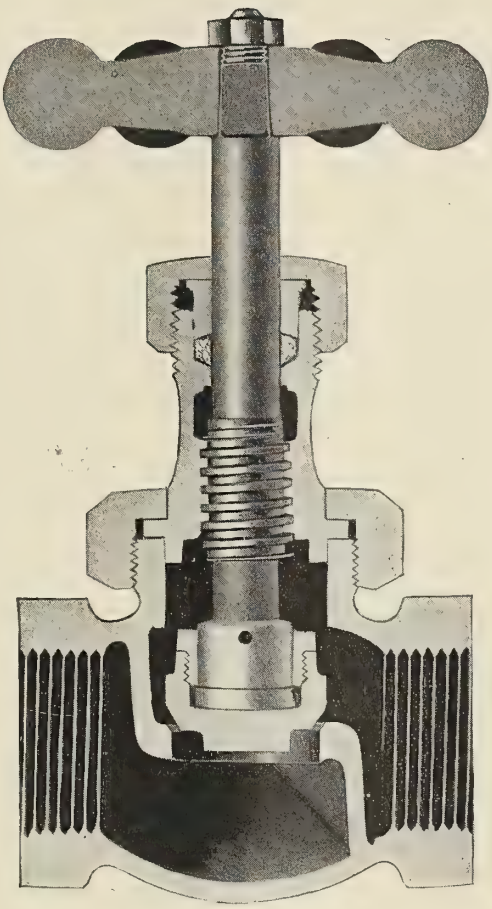

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